COMMERCIAL CAR JOURNAL

50TH ANNIVERSARY SPECIAL

THE MAGAZINE OF FLEET MANAGEMENT

CCJ

A CHILTON PUBLICATION

THE GOLDEN YEARS OF HIGHWAY TRANSPORTATION

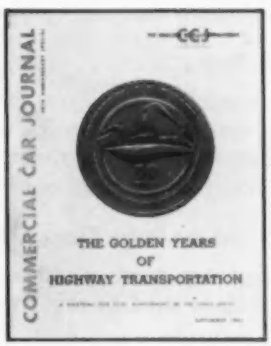
...A BLUEPRINT FOR FLEET MANAGEMENT IN THE YEARS AHEAD

SEPTEMBER 1961

1911

50 YEARS OF SERVICE

TO THE INDUSTRY



1961

COMMERCIAL CAR JOURNAL

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Regional: 360 North Michigan Ave., Chicago 1, Ill. RAndolph 6-2166; 1015 Stephenson Bldg., Detroit 2, Mich. TRinity 5-2090
1091 National Press Bldg., Washington 4, D. C. EXecutive 3-3474

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PROGRESS FROM EXPERIENCE

5 SECTIONS ON WHY AND HOW OF INDUSTRY GROWTH

The Basic Vehicles 101

The makers of trucks, trailers, buses and passenger cars team up with body builders and suppliers to produce the nation's fleets. Where did they start, where are they now, where will they go?

Enter the Fleets 121

Older than trucks themselves, fleets soon became the most important truck users, branched out from local service to intercity hauls. On the way, they have had marked influence on design.

Highways and the Rules Fleets Live By 141

Without highways there would be no trucks, and with them there must be regulations. This is the story of growth and problems in roads and regs, with a careful look at the future.

The Influencing Factors 153

Why does highway transport grow so fast? Among the reasons: Suburbia, plant decentralization, flexibility, more people and, still more, personal demands. Beginning now . . . "The Supermetropolis."

The Long Look Ahead 165

Fleets are still the core of highway transportation. What are their problems? How do they stand competitively, among themselves and with other forms of transportation? What lies ahead?

50TH ANNIVERSARY SPECIAL
VOLUME 102 NUMBER 2

CCJ THE MAGAZINE OF FLEET MANAGEMENT

Russell W. Case, Jr., *Publisher*
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Commercial Car Journal, one of the publications owned by the Chilton Company is published monthly at Chestnut & 56th Sts., Philadelphia 39, Pa. Subscription price: United States and Possessions, $3.00 per year; all other countries $15.00 per year.
Single copies are 50c except April, November and this special issue which are $1.00 each.
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A BLUEPRINT FOR THE FUTURE

5 PULLOUT CHARTS TO GUIDE YOUR PLANNING

No. 1 The Growing World of Motorized Transport 87

Total truck registrations grew from 700 in 1904 to 12 million in 1960 . . . will reach 20 million by 1980. This is the story with pictorial highlights and a detailed chronology of events along the way.

No. 2 Rolling Up the Fleet Miles 117

Fleet mileage grows at faster rate than non-fleet vehicles. Data from selected fleets, both local and intercity, shows trucks averaging as high as 80,000 miles a year and buses up to 89,000 miles.

No. 3 The Boom Between Cities 137

Intercity ton-miles hauled by truck have grown at spectacular rate . . . from 62 billion in 1940 to 185 billion now . . . will rise to 651 billion in 1980. Non-regulated carriers outhaul regulated groups.

No. 4 Highway Transportation and the National Economy 149

Truck tonnage even grows faster than the Gross National Product. This chart shows intercity truck ton-miles plotted against GNP (adjusted to 1954 dollars and excluding services of which trucks are a part).

No. 5 A Nation on the Move 161

Our rising standard of living gives dramatic proof of truck service to all. In 1940, trucks hauled 470 ton-miles for each U. S. man, woman and child. Today, they haul 1553 per person; in 1980, more than 2800!

A DEDICATION FROM THE PUBLISHER

THE HIGHLIGHTS of a half century of progress in the motor fleet industry are chronicled in this 50th Anniversary Special of COMMERCIAL CAR JOURNAL. We have attempted to mirror for you with appropriate emphasis the past, present and future of our vital industry.

Rapid as has been its growth in the past, its future challenges the imagination. It must and will meet every demand of an ever-expanding America.

While it is impossible to recognize them all individually, we dedicate this issue

. . . to the many great men and fine companies whose courage and conviction have built the fleets that serve our nation so efficiently

. . . to the many manufacturers upon whose ever-changing and improving products and services these fleets are so dependent

. . . and to all those whose editorial and advertising talents make possible the rapid dissemination of news and new ideas that are so essential to the continued progress of our industry.

Russ Case
PUBLISHER

A SALUTE FROM THE EDITOR

EVEN WITHIN A LIFETIME, few people get the chance to survey a giant industry—past, present and future. We have had that chance in preparing this volume. It has been a fascinating and rewarding task.

From the mountains of material available and the months of work involved, three impressions stand out above all others.

First is the scope and complexity of the industry. For each of our writers the word "compression" became a bugaboo. Quickly they realized the impossibility of delving as deeply as they would like into each major subject, each facet of development or each problem along the way.

Second is the amazing degree of cooperation and interdependence between manufacturer and supplier; between manufacturer and user, and between the various associations. It is doubtful that any other industry has made such progress in this direction.

Third, and by far the most important, is the evolution of "men of action" . . . leaders in both manufacturing endeavor and fleet operations. By them the industry was built. On their shoulders it will go forward in the Golden Years ahead.

Bart Rawson

EDITOR

American Pipe & Construction Company operates Autocars over the vast stretches of the West and Far West. One primary reason for recently ordered A-10264's is the outstanding WHITE-AUTOCAR service organization.

Tough construction hauling built Autocar's name

And WHITE-AUTOCAR comprehensive service backs up Autocar's fame as the "World's Finest". It's a combination that makes Autocar pay off most profitably in the rugged work of construction and building-material hauling.

For example, American Pipe & Construction Company uses Autocar A-10264's to cover vast distances across the California desert, up into Washington, Oregon, Idaho and western Canada, with other runs over Arizona and New Mexico. This is no country for "tenderfoot" trucks!

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Combine greater payload with WHITE-AUTOCAR specialized heavy-duty truck servicing, and you see why construction men hate to settle for less than Autocar.

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

50
47

3 years to go...miles ahead

WE STILL HAVE 3 YEARS TO GO to reach Commercial Car Journal's half century of service to the Highway Transportation industry.

COOPER BEGAN THE MANUFACTURE of quality rubber products in 1914. During our 47 years Commercial Car Journal has helped us build an ever-growing market for Cooper tires and tubes that put users "miles ahead."

WE ARE GRATEFUL to this publication for its half century of service to the Highway Transportation industry and for its many contributions to Cooper's success. We extend best wishes to Commercial Car Journal on the occasion of its 50th anniversary.

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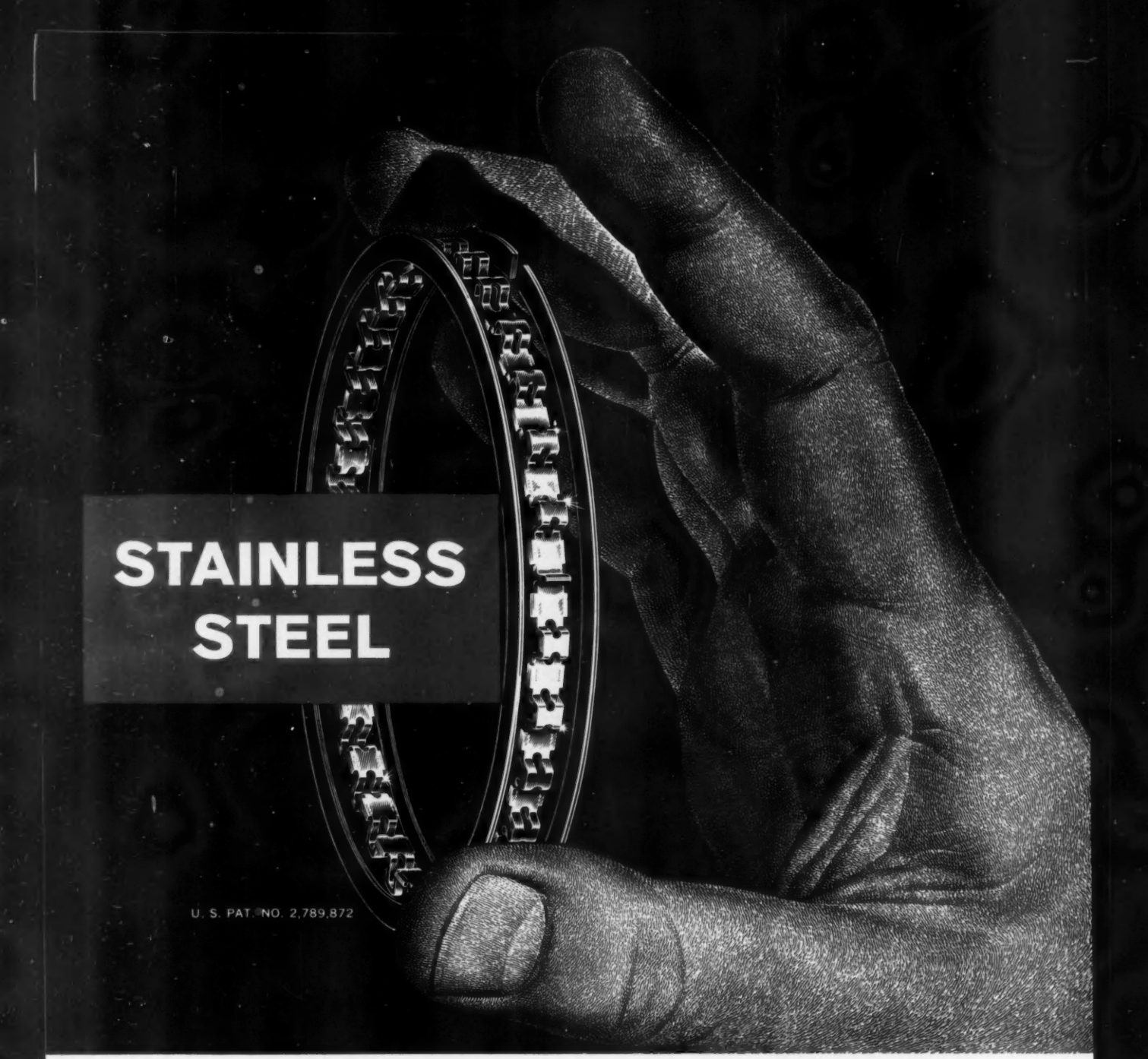
TIRES • TUBES • TREAD RUBBER • INDUSTRIAL RUBBER PRODUCTS FOR HIGHWAY TRANSPORTATION



How to turn the clock back...

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Sealed Power Stainless Steel oil rings stop oil pumping

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Wagner Lockheed Hydraulic Brake Parts for replacement needs *fit right* and *work right*. They are manufactured with the same machinery—to the same specifications—as parts used for original equipment. Line includes master and wheel cylinders, repair kits, pistons, springs, washers, cups and hose for every make and model vehicle with hydraulic brakes.

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Roll up twice the

—roll back cost-per-mile, too—with

PROVED:
Wider, flatter tread puts more rubber on the road for smooth, even rolling—longer wear.

PROVED:
Thicker tread (up to 60% deeper than conventional tires) is compounded with super-toughening agents for longest-lived, slowest-wearing rubber produced today.

PROVED:
Wide, scientifically placed grooves vent heat, provide cooler-running temperatures, help keep heat build-up to safe minimum.

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Hundreds of deep-cut gripping edges guard against slips or spins, provide safer, surer traction.

PROVED:
3-T Process Nylon Cord body fights heat, shock and fatigue — can be recapped again and again.

Cross-Rib tires deliver at least twice the drive-wheel mileage of conventional tires. Tire cost-per-mile is much lower, too.

These figures have been recorded under a wide range of highway conditions. Whatever the size or number of your trucks, no matter where they roll—you'll be miles ahead when you buy or specify Cross-Ribs. See your Goodyear Dealer about Cross-Ribs or any of the other long-wearing tires in the Goodyear line. Or write:

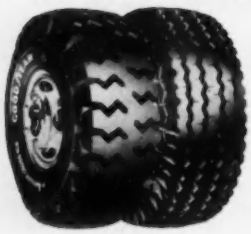
Goodyear, Truck Tire Dept.,
Akron 16, Ohio.

M. E. S. CAN SPELL BIG SAVINGS FOR YOU!

The new Goodyear Mileage Engineering Service costs you nothing in fees, extra equipment or man-hours, yet can provide new lows in tire cost-per-mile and capital investment. Basically, M. E. S. is a new plan of tire usage that lets you get maximum benefit out of Cross-Ribs and other long-wearing Goodyear tires and keeps your trailer tire needs in balance. To put M. E. S. to work for you, just write Goodyear, Truck Tire Dept., Akron 16, Ohio.

TOP TEAM FOR BIG TRUCKS

HI-MILER CROSS-RIB
for drive wheels



TRACTION HI-MILER
for front wheels

GOOD

MORE TONS ARE HAULED ON GOODYEAR

drive-wheel mileage

the billion-mile-proved CROSS-RIB

PERFORMANCE THAT'S EVEN BETTER THAN THE PROMISE

"More Than Triple the Mileage with Cross-Ribs"

"We get 90,000 to 100,000 miles with Cross-Ribs, as against 30,000 miles with the standard tires formerly used." This is the report of Roy Huser, President of Transport Motor Express, Fort Wayne, Indiana. "We find Cross-Ribs to be the best traction tire we can use," he writes, "to maintain our Scheduled Service—even through the worst of winter snows."

YEAR

TRUCK TIRES THAN ON ANY OTHER KIND

Member of ATA Foundation of the American Trucking Industry

Hi-Miler—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

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TR-939

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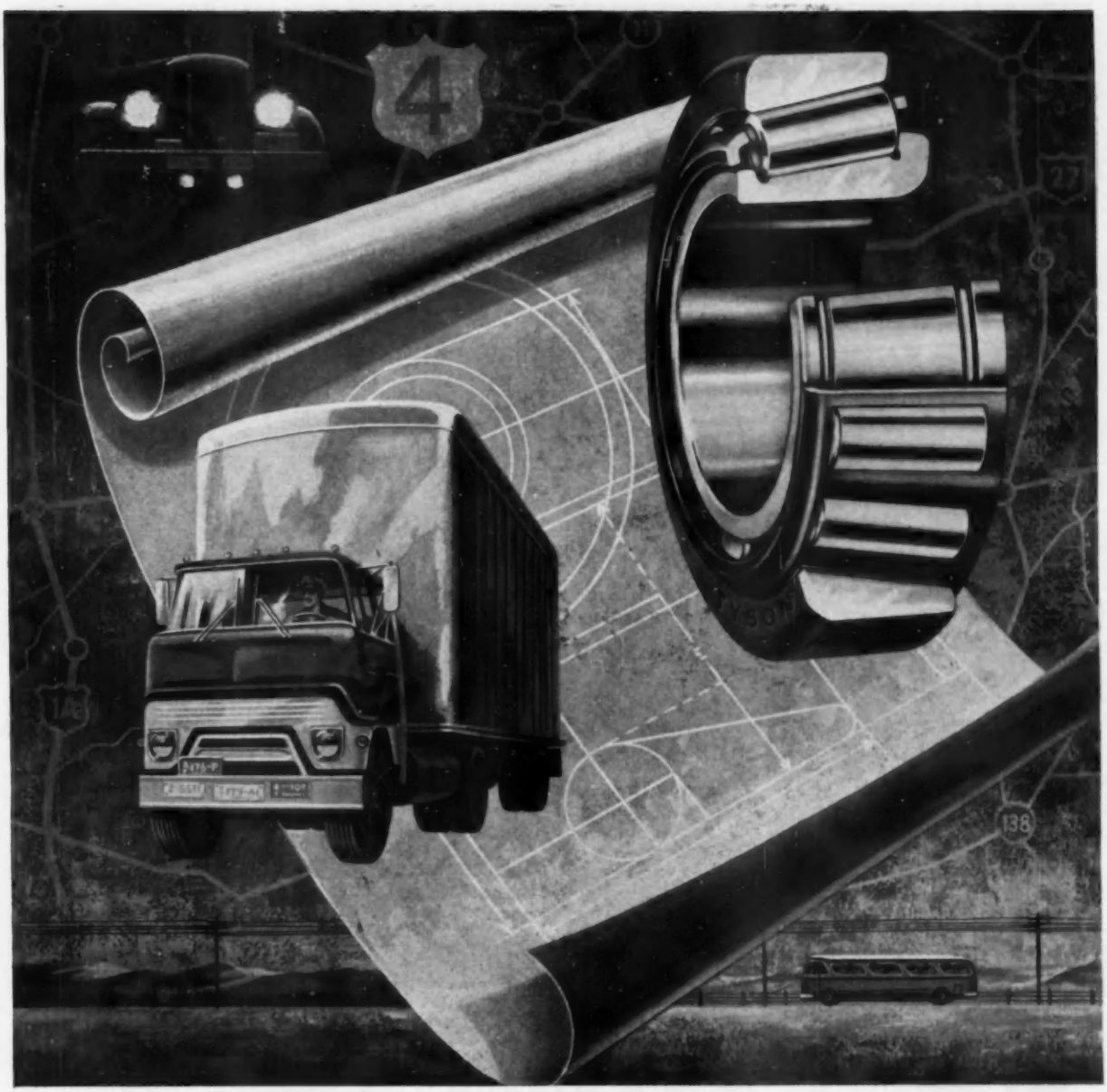

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6124

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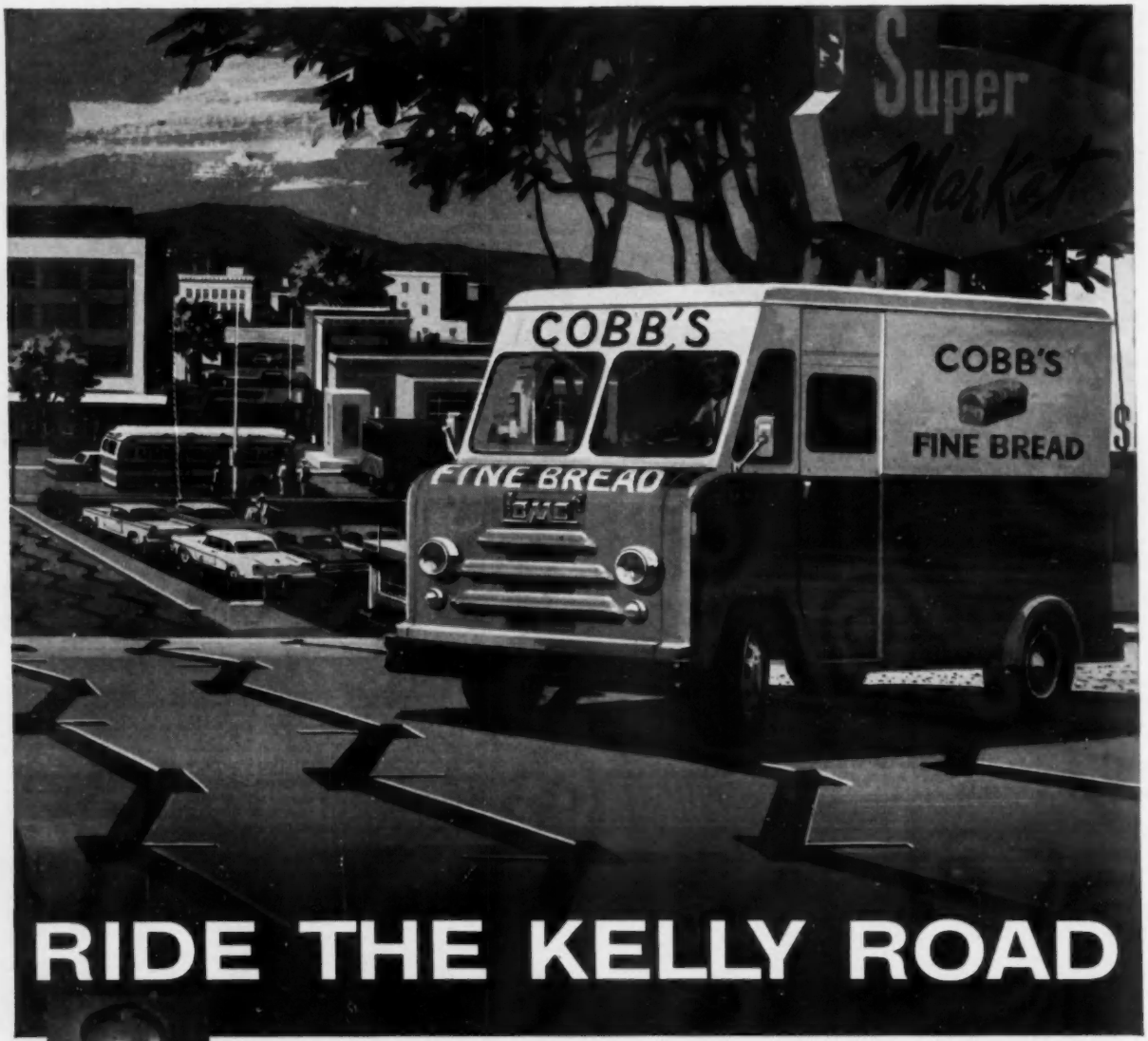

RIDE THE KELLY ROAD

like Bay Rental Service!

Lawrence Blodgett, Supt., Maint., Bay Rental Service, Green Bay, Wisconsin says:

"We operate a truck rental business and most of the time our units are put to severe service. We can't afford to have our trucks idle or delayed due to tire failures, so we depend on Kellys! We recently purchased 16 new trucks and, as usual, specified Kelly Super Armor Trac tires on all units."

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Why not benefit from the experience of truckers like Bay Rental Service? Put your trucks on the Kelly Road and see for yourself the added economy and dependability you'll enjoy. Your friendly Kelly Dealer has a quality tire for every type of car and truck. See him soon! Or write to the Kelly-Springfield Tire Co., Cumberland, Md.

PROVED AND IMPROVED FOR 67 YEARS!

KELLY SUPER ARMOR TRAC. Rib design gives even wear on front wheels plus extra-long all around original tread life. Deep-cut cross slots provide greater traction and road control. Exclusive Armorubber tread. Rayon or nylon body. Tubeless or tube-type.

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48" LIFT HYDRAULIC 5th WHEEL

By Mfrs. of Bartlett "Piggy Back" Lift Fifth Wheels, sold Internationally for more than 12 years. Available in 12", 14", 18", 24", 30", 48" and 57" heights.

CAN BE HELD IN ANY POSITION FOR SPOTTING. FULLY EXTENDS TO 48"—HAS 2-7" CYLINDERS

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AIR OR LEVER FULL CAB CONTROLS — EASILY MOUNTED ON 34" TRUCK FRAME WITH 66" OR MORE C. A. DIMENSION.

COMPLETE KIT MOUNTS ON TRACTOR. NO EXTRA EQUIPMENT NEEDED

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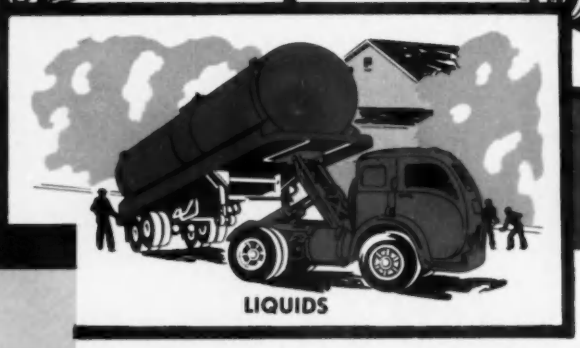
NEW! 48" LIFTING HYDRAULIC 5th WHEEL



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DEVELOPED for EXTRA USES

DUMPING TRAILERS HANDLING PRODUCTS LISTED

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SPEED YOUR UNLOADING . . . SAVE TIME and MONEY!

DOES TREMENDOUS JOB OF YARD DUMPING ESPECIALLY IN HOPPER OPERATIONS

CAN MAKE ONE HUNDRED DUMPS PER DAY.
USED WITH ANY CONVENTIONAL TRAILER—
LIFTS ABOVE CAB IN A FLASH!

SIMPLE IN DESIGN . . . MAKES APPLICATION AND OPERATION EASY.

LOW MAINTENANCE COSTS—WORKING PARTS KEPT TO A MINIMUM.

DEFINITELY CUTS { *DUMPING* / *HANDLING* } *COSTS!*

NOT MADE FOR HIGHWAY USE
OR SAND—GRAVEL—COAL—WET PRODUCTS

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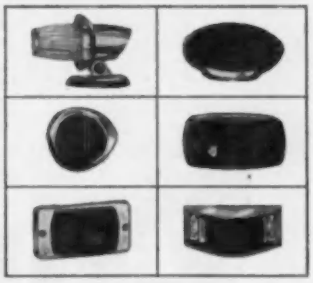
Now, for the first time, you have a choice in the matter! Now you can put an end to constant bulb replacements and at the same time save up to $200 per vehicle per year in labor, parts and down time! Most of your bulbs are killed by road shock. Signal-Stat's solution is simple. Just prevent road shocks from reaching the bulb. Signal-Stat's new Shockmount lamps have a patented floating socket that isolates bulbs from the killing effects of bumps and jolts. See Shockmount's amazing performance on vibration machines at clinics across the country; see bulbs in Shockmount lamps outlast bulbs in ordinary lamps ten, twenty and thirty to one. Ask your jobber or write direct.



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THE TRANSPORTATION HEART OF OUR NATIONAL ECONOMY

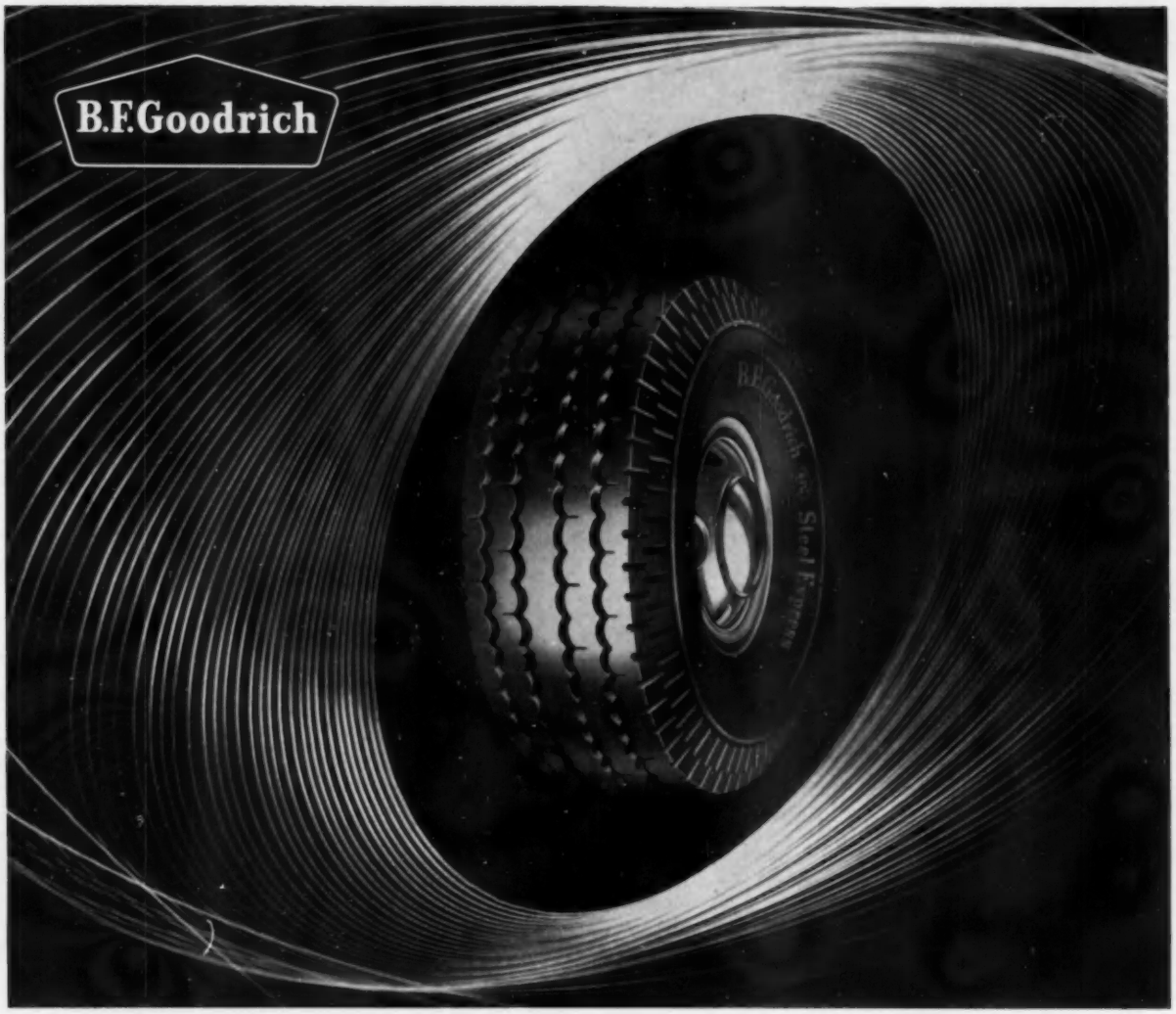
From quarter-ton pickups to mammoth 30-ton transcontinental trailers, over 11 million trucks are hauling about two-thirds of the total freight tonnage in America. In 1960, these piston-powered conveyances carried over 225 billion ton-miles of cargo and provided direct employment for 7,500,000 people.

The servicing required is gigantic business for maintenance shops — and piston power by Zollner is by far the dominant choice of fleet owners, everywhere, for highest engine performance at lowest maintenance cost.

THE ORIGINAL EQUIPMENT PISTON OF OVER 70% OF ALL MAKES OF TRUCKS AND BUSES

ZOLLNER Pistons

FOR EVERY TYPE INTERNAL COMBUSTION ENGINE—GASOLINE OR DIESEL



B.F. Goodrich weaves a steel girdle to stop 2-way stretch in truck tires

New B.F.Goodrich Steel Express stays in shape to deliver twice the tread life of a conventional tire

Surprising fact: the tread of a conventional truck tire is not stable—it squirms from side to side and "front to back" when it contacts the road. This 2-way stretch increases tread wear, decreases traction, builds up rolling resistance and heat.

B.F.Goodrich solution: a unique steel girdle made of steel cords placed around the circumference of the tire carcass (see cross-section A). This girdle is inelastic. The tread rests on a solid foundation—stays in shape as it rolls (think of a hoop). No tread squirm—no 2-way stretch. That's why the BFG Steel Express delivers *twice* the tread life of a conventional tire. Another remarkable result: the Steel Express tread takes a quick, non-slip grip on the road. Traction jumps as much as 30%. Fuel costs drop 10% or more.

Single ply steel cord body adds strength, runs cooler

B.F.Goodrich builds the Steel Express with only *one* body ply of steel cords that run radially from bead to bead (see cross-section B). No unnecessary body thickness to generate tire-killing heat. The Steel Express runs up to 30° cooler. This single steel cord ply has more effective strength than 14 textile plies (it would take 388,000 pounds of pull to break the cords in a 10.00-20 tire)—and more bruise and impact resistance in the tread area than *any* number of textile plies.

Extra benefits: a softer ride, greater cushioning for equipment and cargo—because the single ply sidewalls are highly flexible.

The Steel Express (for highway service only) is available now, newest in the complete line of BFG tires for all types of truck work. If you've got the wheel, your BFG dealer has the tire. See him today. He's listed under Tires in the Yellow Pages. *The B.F.Goodrich Co., Akron 18, Ohio.*

Since 1917...

Oshkosh

has achieved world-wide leadership
in the development of heavy duty

ALL-WHEEL-DRIVE TRUCKS

THROUGH THE YEARS . . . **OSHKOSH** has pioneered heavy duty all-wheel-drive trucks. Since 1917, **OSHKOSH** has steadfastly maintained its world-wide reputation for product quality, operational dependability, field service, and sales integrity.

First production model — 1917

Latest design for Snow Removal service

New Oshkosh Mine Truck

TODAY — **OSHKOSH** is the leading manufacturer of heavy duty all-wheel-drive snow removal vehicles. **OSHKOSH** remains the only exclusive all-wheel-drive manufacturer offering a complete line of custom built 4 x 4 and 6 x 6 heavy duty all-wheel-drive special purpose trucks.

OSHKOSH MOTOR

Snow Removal

Cane Haulers

Off-Highway Concrete Carrier

Military

Mining and Construction

Utility

Fire Trucks

Oil Field Drilling and Exploration

OSHKOSH trucks are custom engineered and custom built to meet specific needs.

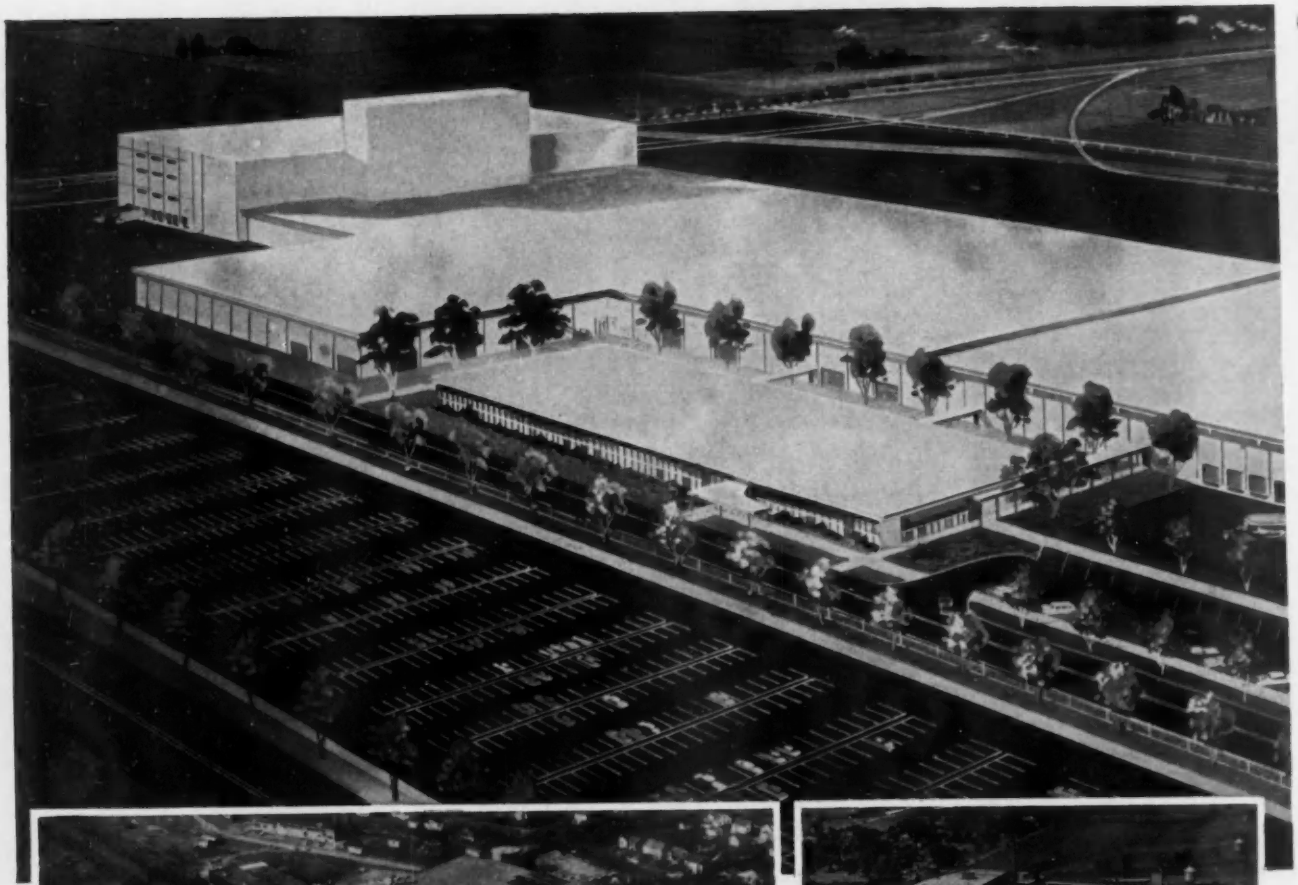
May we help you?
No obligation, of course.

Write...
OSHKOSH Motor Truck, Inc.,
2307 Oregon Street,
Oshkosh, Wisconsin

TRUCK, INC. | **OSHKOSH WISCONSIN**

ARMSTRO

"California,

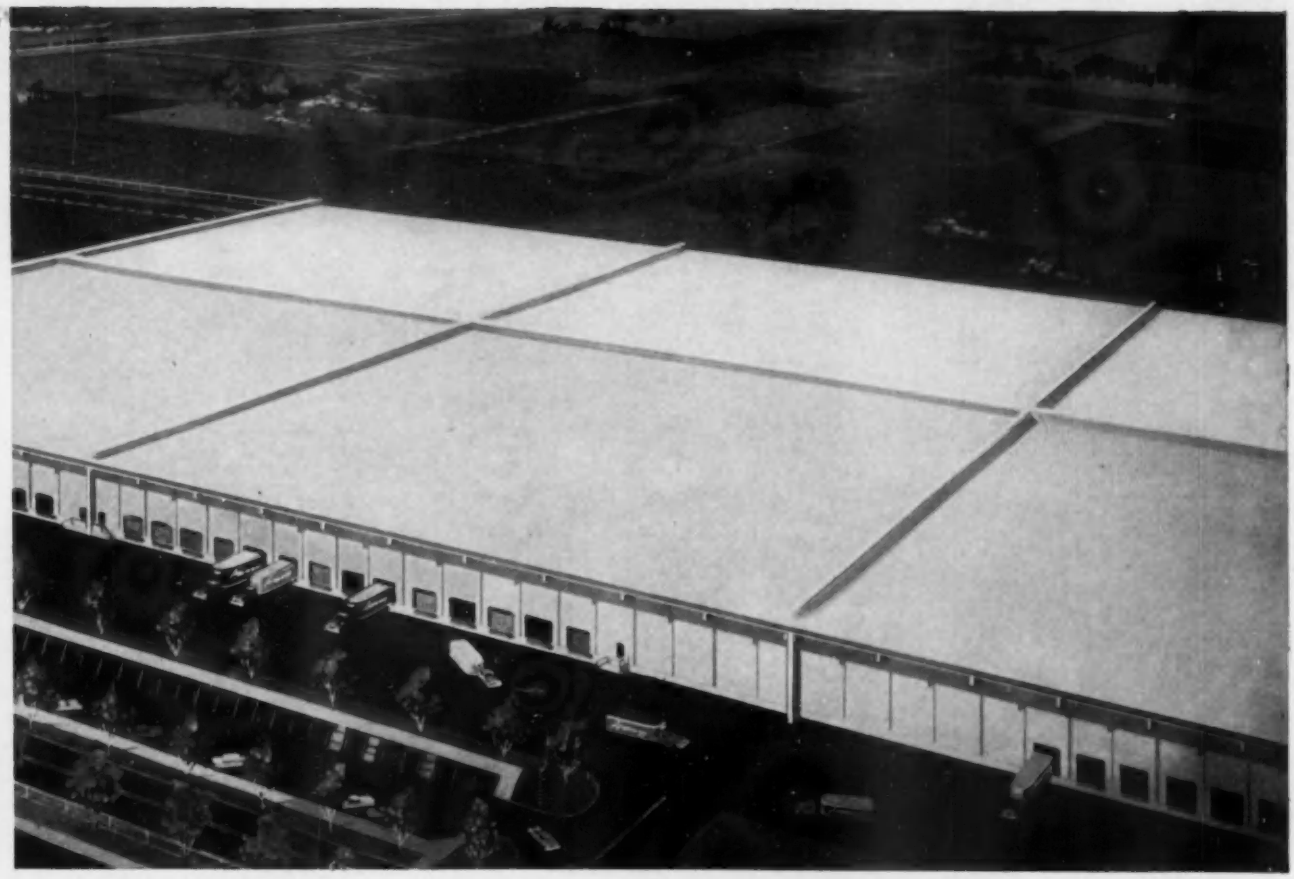


West Haven, Conn.

Des Moines, Iowa

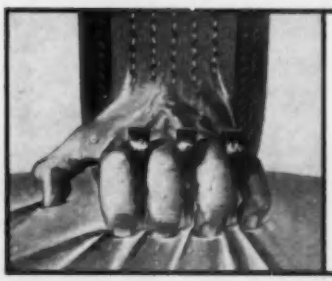
Natchez, Miss.

NG TIRES
here we come!"



California, here we come!...with a $25,000,000 plant in Hanford, California that will add tremendous capacity to Armstrong tire production... that will enable Armstrong to meet the constantly growing demand for tires with patented Safety-Disc grip! This plant is proof, in concrete and steel, that there's a big future for you in the tire business with Armstrong, the company that makes a profit promise to its dealers and lives up to it!

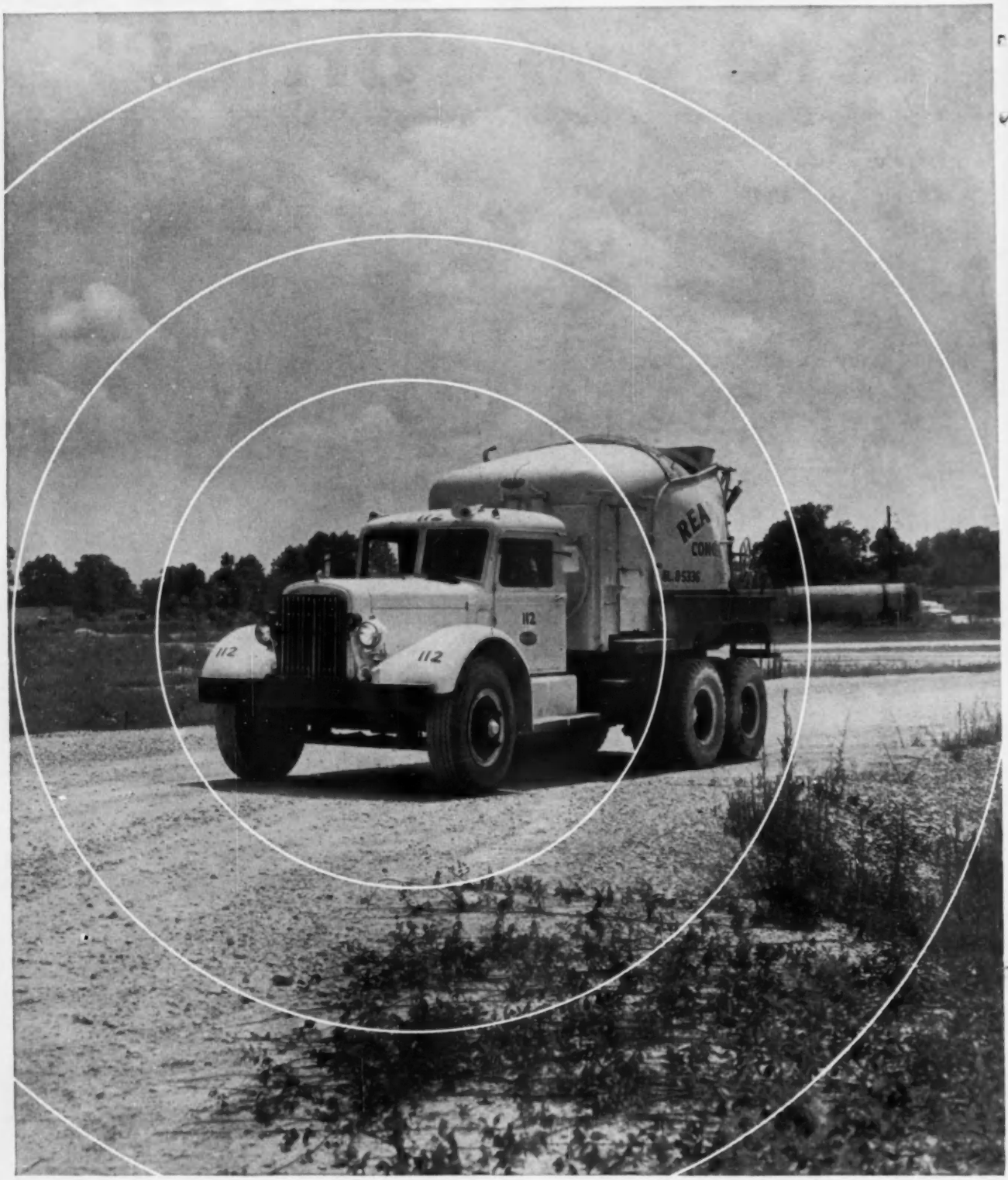
GET THE FACTS AND GROW WITH ARMSTRONG



...the Tires with the patented "pay-off" features!

THE ARMSTRONG RUBBER COMPANY, HOME OFFICE, WEST HAVEN, CONNECTICUT

Louisville's Ready Mix Concrete



Co. gets ACtion with AC

"We have tried other spark plugs and oil filters but ACs give us the best results. We use AC spark plugs and oil filters exclusively in all our truck engines."

Ben J. Campbell,
General Superintendent,
Ready Mix Concrete Co.,
Louisville, Ky.

The Ready Mix Concrete Co. of Louisville is one of that city's largest suppliers of concrete products. Each of its 31 modern, radio-telephone trucks averages a thousand miles a week delivering ready mix cement, concrete blocks and bulk aggregates. As such trucks must, these trucks haul heavy loads on rough roads and no roads. They stop and start in city traffic, and move fast on the highway.

The dust and grit of this operation offers a tough test of spark plugs and oil filters.

The Ready Mix Concrete Co. uses AC Spark Plugs and AC Oil Filters for all its engines, including the ready mix auxiliaries and the engines of the fork lift trucks that hoist concrete blocks.

"We use AC Spark Plugs because they work better, longer—and we use AC Oil Filters because they keep our engines and oil cleaner," says Ben Campbell, General Superintendent.

AC Fire-Ring Spark Plugs and AC Triple-Trapper Oil Filters will perform the same way in your operation. Call your AC Representative and start getting the money-saving, reliable ACtion you get with AC!

AC SPARK PLUG ❀ THE ELECTRONICS DIVISION OF GENERAL MOTORS

Your best line of ACtion

AC

FIRE-RING
SPARK PLUGS

TRIPLE-TRAPPER
OIL FILTERS

Shipping Power!

...by the numbers!

More than **3,000** vehicles

Including **720** 40-foot trailers (some Evans Loader equipped)

and **198** tandem axle tractors

69 modern terminals

Direct service to over **9,000** points

Over **23,000** route miles

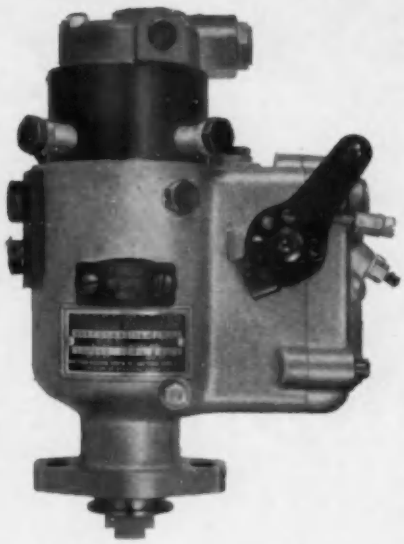
in **24** states

TRUCKLOAD and LTL SERVICE: Direct, single-line, scheduled — the fastest, most dependable delivery in the transportation industry. Your shipments leave on schedule and arrive on schedule with clock-like precision. Call us the next time you have freight to move within our authority. We're in the Yellow Pages.

INTERSTATE SYSTEM

Grand Rapids 2, Michigan Canadian Offices: Toronto, Montreal

MORE THAN A TRUCK LINE...A TRANSPORTATION SYSTEM



PROGRESS THROUGH SIMPLICITY

Roosa Master's revolutionary design has made a most significant contribution to the diesel industry. Roosa Master has helped increase engine speed. Roosa Master accessories have helped solve engine manufacture problems. Simplicity of design saved space, lowered costs, and led to progress in diesel engine manufacture. Let us show you how Roosa Master can contribute to your new engine design. Hartford Machine Screw Company, Division of Standard Screw Company, Hartford 2, Connecticut.

Mack

you can depend on the diesel that depends on HMS ROOSA MASTER

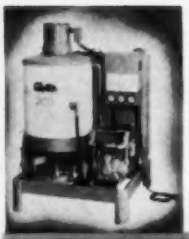
1931

ON THE MOVE WITH A GREAT INDUSTRY

THIRTY YEARS of creative engineering and constant expansion of production facilities and services have kept the Clayton Manufacturing Company paced to the progress and ever-changing demands of the trucking industry. Back in 1931 the first "Big Bertha" Clayton steam cleaning machine was installed in the maintenance shops of one of the largest fleet operators in the West. Today, across the nation, literally thousands of motor carriers—passenger and freight—have standardized on Clayton steam cleaners and Clayton steam cleaning compounds.

Clayton

A quarter century ago, Clayton introduced the first practical service chassis dynamometer. Engine dynamometers soon followed. At the present time, more than 31 million miles are traveled on the rolls of Clayton dynamometers every year; over 25 million horsepower hours are run on Clayton engine dynamometers. Hundreds of fleet operators, engine rebuilders, military installations and vehicular industries around the world depend on Clayton dynamometers for rapid, accurate power analysis of engine performance under load. Clayton salutes the trucking industries and is proud of its contribution to their development through three decades of service.



CLAYTON STEAM CLEANERS FOR APPEARANCE MAINTENANCE • • • CLAYTON DYNAMOMETERS FOR FUEL ECONOMY AND EFFICIENCY

CLAYTON MANUFACTURING COMPANY

433 N. TEMPLE CITY BLVD., EL MONTE, CALIFORNIA

MANUFACTURING FACILITIES IN 8 COUNTRIES OVERSEAS; SALES AND SERVICE IN 88 COUNTRIES AROUND THE WORLD

1961

Suddenly you "Had it Made..."

simply because you "*found*" the MOST UNUSUAL Christmas gift-giving idea for *customers, employees and friends* EVER SEEN!

...and "*everybody's talking about you.*" Your customers would call to say "THANK YOU" for your *unique and wonderful remembrance* and thereby open the door to ADDITIONAL SALES! Even your employees and friends *showed their appreciation* in the many small ways ONLY YOU would understand.

If YOU buy gifts *(between $7.50 and $100.00 each)*, you'll *surely* want to see this *unusually practical, sensationally simple* and *refreshingly different* way of saying "THANK YOU" to the people who are IMPORTANT TO YOU AND YOUR COMPANY.

WRITE **TODAY** FOR MORE INFORMATION ABOUT THIS **PRESTIGE** GIFT-GIVING IDEA!

MAIL TO: ▶ **Automated Gift Plan, Inc., 80 Park Avenue, New York 16, N. Y.**

MAIL THIS COUPON

Please send further information about your 1961 Gift Bookard program.

Name of Company _____

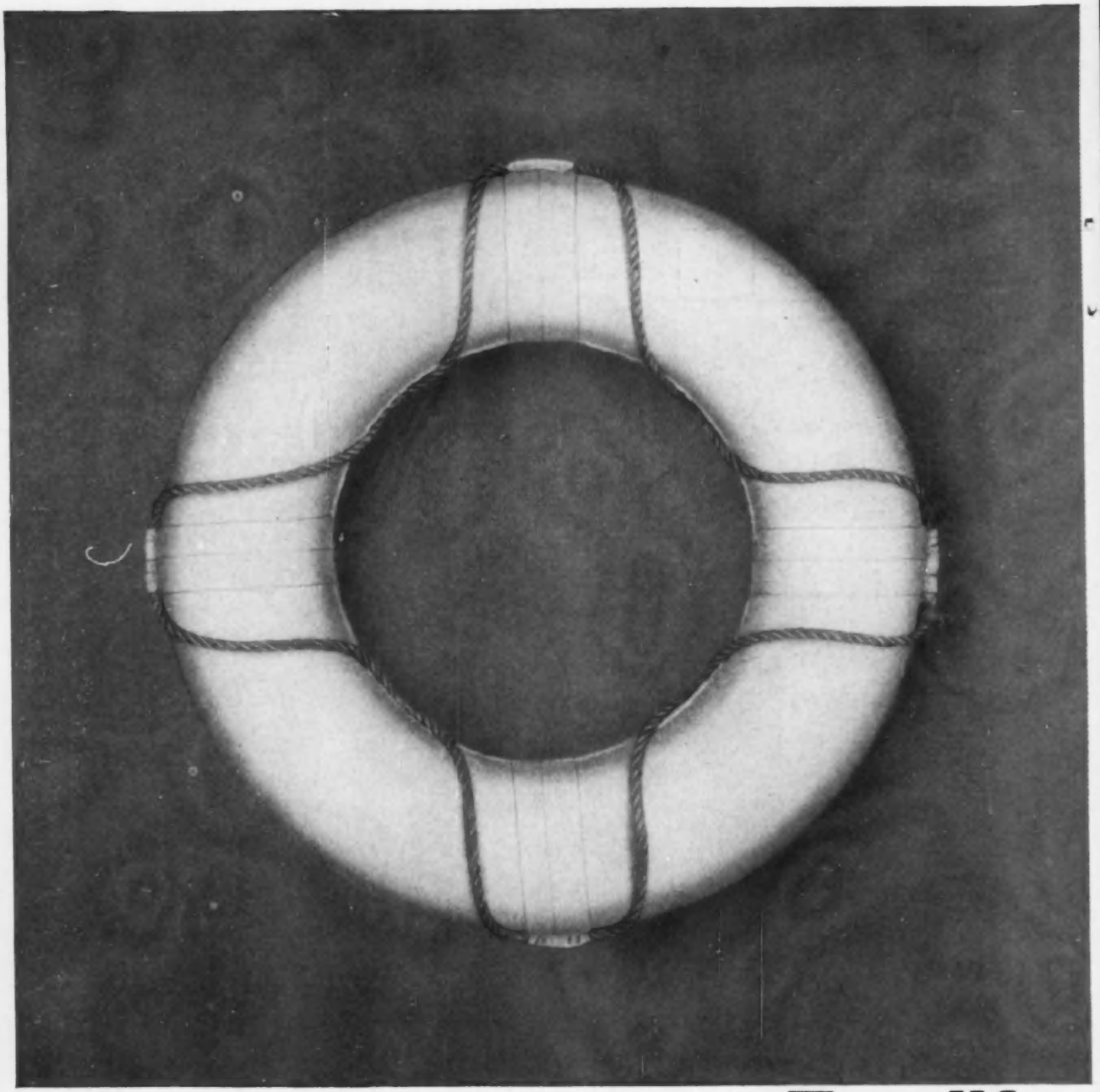
Address _____

City _____ Zone ___ State _____

Att: _____ Title _____

We use approx. _____ Gifts in the $7.50 to $100.00 price range

CC-21



Two life

A ring lifebuoy.

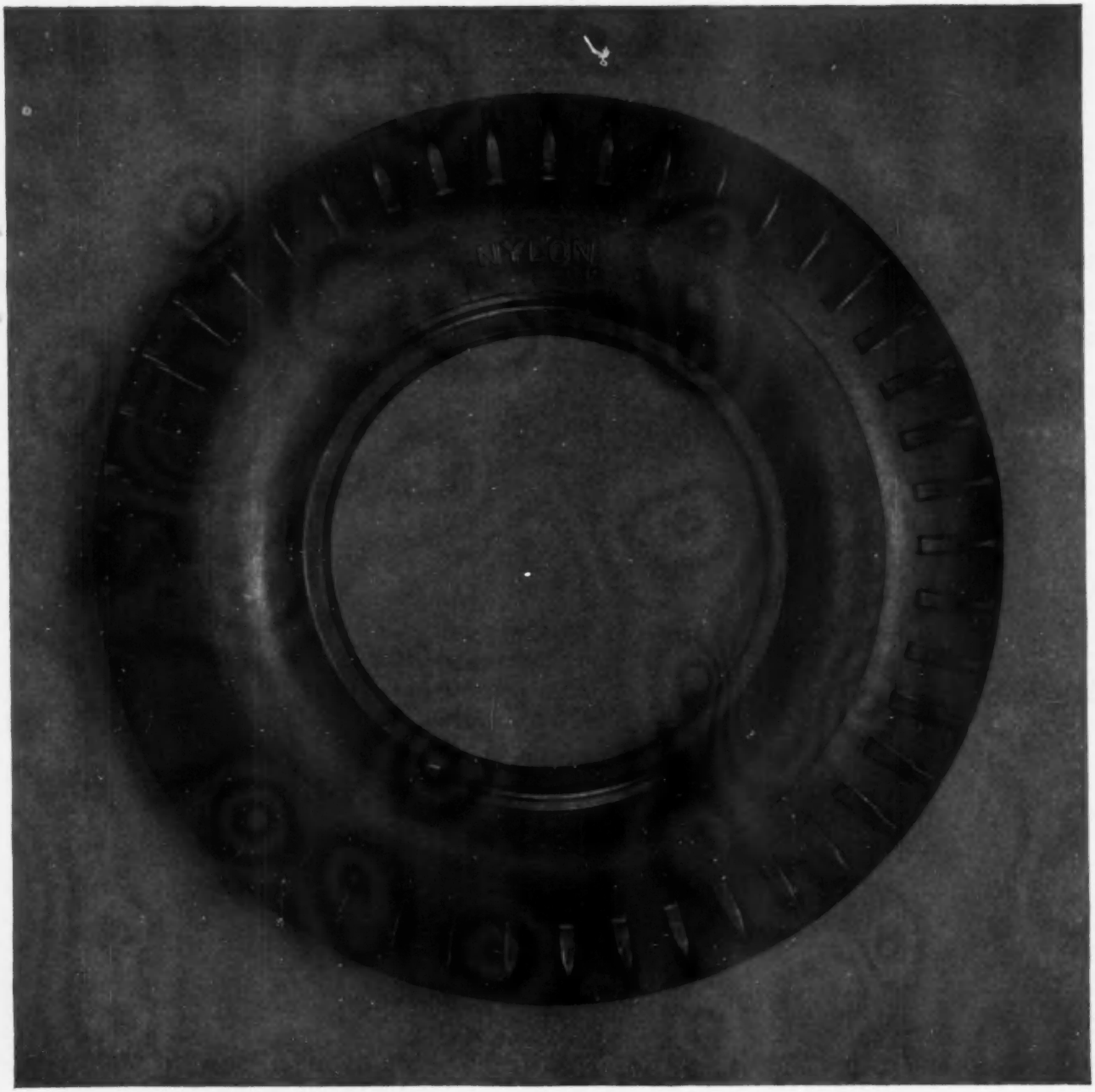
A nylon cord tire.

You may never need the extra protection they give you. But it's sure good to have when the going gets rough!

Take the nylon cord tire. Why is this the safest tire you can put on your trucks? Because, it offers the surest safeguard against heat build-up and impact damage—the major causes of tire failure. At turnpike speeds, nylon cord is almost twice as strong as rayon cord, including Tyrex rayon.

THE CHEMSTRAND CORPORATION

GENERAL SALES OFFICES: 350 FIFTH AVE., N.Y. 1, N.Y. • DISTRICT SALES OFFICES: 350 Fifth Ave., New York 1; 3½ Overwood Rd., Akron, Ohio; 129 West Trade St., Charlotte, N.C.;



preservers

And nylon cord is virtually unaffected by moisture that weakens rayon cord.

This stronger tire cord also means greater tire mileage. According to a survey of truckers, nylon cord tires got more original miles to begin with, and then were retreaded up to five times! Remember these facts next time you buy truck tires: Nylon is stronger, more dependable, more economical.

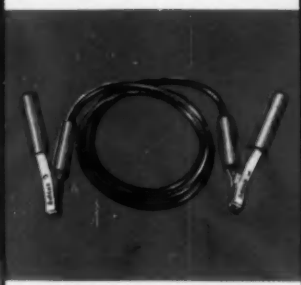
Chemstrand® nylon • Member ATA FOUNDATION

CHEMSTRAND NYLON®

Chemstrand makes only the *yarn*; America's finest tire manufacturers do the rest.

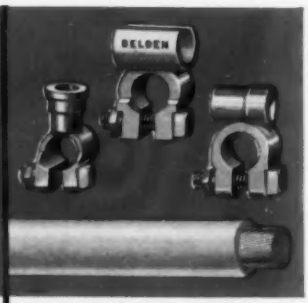
Canadian Agency: Fawcett & Co., 34 High Park Blvd., Toronto, Canada • PLANTS: CHEMSTRAND® NYLON—Pensacola, Fla.; ACRILAN® ACRYLIC FIBER—Decatur, Ala.

CORD REEL Heavy-duty cord reels, cordlites and extension cords—vinyl and neoprene. Oil, grease and ozone resistant. UL and SECC approved.

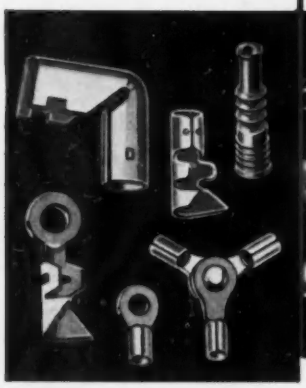


ACCESSORIES Booster cables, battery connectors, clips, fuse connectors, loom and clear vinyl tubing.

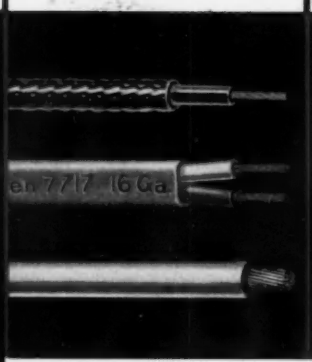
IRS IGNITION SETS For ignition radiation suppression. Increases two-way radio performance. Offers high engine performance. Also all other types of ignition wire.



BATTERY CABLE TERMINALS AND BATTERY CABLE For making up special battery cables—a complete range of terminals and starter cable.

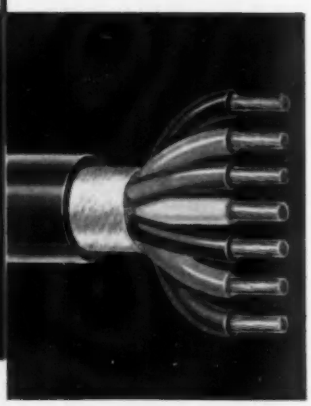


HEAVY-DUTY TERMINALS Complete line of terminals for spark plug wire, primary wire, and battery cable. Rugged for fleet use. Available with or without insulation to meet requirements.



ENGINE COMPARTMENT WIRE Withstands high heat from exhaust, manifold, and other hot spots. Flameproof. Resistant to gasoline, oil, antifreeze, cleaning fluids. Also, a complete line of rugged plastic primary wire.

PORTABLE WIRING KIT Portable wire and terminal department. Easy-to-make-up primary leads and spark plug wires for any truck, bus or tractor. Complete with wire, terminals, crimper and cable stripper tool.



TRAILER LEAD WIRE An oil and grime-resistant insulation. Made to ATA specifications. Color coded. Also available with 3, 4, 5, and 6 conductors.

FOR FLEETS... A Complete Line of Belden Wire and Cable

Fleet owners large and small have discovered that Belden wire and cable gives longer service life—provides more efficient operation. This is because the Belden line is specially designed and engineered for rigorous fleet service. There is a Belden jobber near you—ask him for complete information and establish a one source supply for all of your wire and cable needs.

7-2-1

magnet wire • lead wire • power supply cords • cord sets • portable cordage • electronic wire • control cables • automotive replacement wire and cable

Belden
WIREMAKER FOR INDUSTRY
SINCE 1902 — CHICAGO

DETACH AND SAVE THIS HANDY BUYING GUIDE

HERE TO HOIST YOUR EARNING POWER TO NEW HIGHS

A NEW WORLD OF WORTH IN

'62 CHEVROLET JOBMASTER TRUCKS

LITHO IN U. S. A.

NEW HIGH TORQUE POWER

New Easy-View Styling!

NEW DIESEL MODELS

NEW JOB MATCHED EFFICIENCY

NEW CHEVIES BY THE HUNDREDS WITH NEW HIGHS IN HARD-WORKING POWER... NEW STYLING THAT DOES MORE FOR YOU... NEW JOB-MATCHED MODELS AND COMPONENTS... A NEW WORLD OF WORTH THAT'S OUT TO DO MORE WORK!

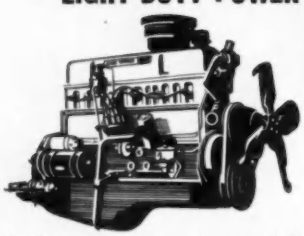
CHEVROLET

NEW HIGH-TORQUE POWER

POWER'S UP IN EVERY WEIGHT CLASS

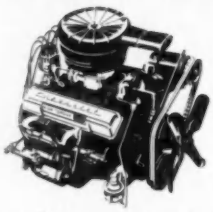
There's a new world of worth in the Chevy truck line for '62—trucks powered and built to work more, save more, *earn* more! Power's *up* in every weight class: big High Torque 261-cubic-inch 6* is new in light-duty models; new High Torque 327* powers middleweights; new 409 V8* puts out more pull in the heavyweight trucks. And there's new medium-duty *diesel* power, too—a sure income booster on extra-tough runs! A total of nine great High Torque engines enables you to match truck power to your job precisely for top performance and economy. **Optional at extra cost.*

NEW WIDER CHOICE OF LIGHT-DUTY POWER



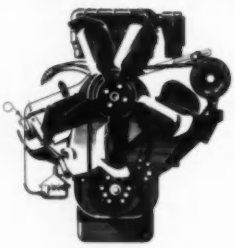
New for '62!—three famous work-proved Chevrolet truck engines for the Chevy light-duty line! Standard in all conventional models is the sure-saving High Torque 235 Six, a truck engine that's powered more payloads than any other in the history of hauling. *And, for 1962, the rugged, extra-durable 150-h.p. 261 Six is available at extra cost. Here's high torque power plus proved 6-cylinder economy—a combination that can put you money ahead on tough runs!* And, for the extra punch of V8 power, Chevy's 160-h.p. 283 V8 is available at extra cost.

NEW 327-CU.-IN. V8 FOR MEDIUM-DUTY MODELS



It's the biggest Chevy medium-duty engine yet, with more power and hard-pulling torque to keep maximum payloads rolling at minimum cost. Check the specs at your Chevy dealer's and you'll see scores of reasons for *efficient* performance: 185 h.p., 305 ft.-lbs. of torque, durable Moraine M-400 bearings, fuel-metering 2-barrel carburetor, hard-faced exhaust valves—premium components from top to bottom! New 327 V8 is optional at extra cost in Series 60 and 60-H. Economical heavy-duty 261 Six is standard in these models.

NEW 409-CU.-IN. V8 FOR HEAVY-DUTY MODELS



Here's the new dimension in High Torque power—409 cubic inches of efficient load-moving muscle, designed to *GO* and built to *keep* going in hard-pressed heavyweight duty. It's available as an extra-cost option for all Series 80 models, including the M80 tandems, with an extra wallop to get even king-sized loads under way in a hurry, and keep them moving easily and efficiently. You get 252 horsepower, and a whopping 390 ft.-lbs. of torque, backed by a build that just won't quit. It's loaded with the best in premium-quality, top-durability design features—assurance that your tough jobs are tamed for good!

1962 CHEVROLET HIGH TORQUE GASOLINE ENGINE (PERFORMANCE DATA AND APPLICATIONS)

HIGH TORQUE ENGINE MODEL	145 SIX	235 SIX	235 SIX	261 SIX	283 V8	327 V8	348 V8	409 V8
MAXIMUM GROSS HF @ RPM	80 @ 4400	135 @ 4000	135 @ 4000	150 @ 4000	160 @ 4200	185 @ 4400	220 @ 4400	252 @ 4000
MAXIMUM NET HP @ RPM	65 @ 3600	115 @ 3600	110 @ 3600	130 @ 3800	137 @ 4000	158 @ 4000	180 @ 4000	215 @ 4000
NET HP @ GOVERNED RPM	——	——	——	——	——	156 @ 3700	180 @ 3700	213 @ 3700
GROSS TORQUE, LB.-FT. @ RPM	128 @ 2300	217 @ 2000	217 @ 2000	235 @ 2000	270 @ 2000	305 @ 2000	325 @ 2600	390 @ 2400
NET TORQUE, LB.-FT. @ RPM	118 @ 2200	195 @ 2000	192 @ 2000	218 @ 2000	250 @ 2000	280 @ 2000	300 @ 2400	352 @ 2400
DISPLACEMENT, CUBIC INCHES	145	235	235	261	283	327	348	409
CARBURETOR TYPE	Dual	Downdraft	Updraft	Downdraft	2-barrel	2-barrel	4-barrel	4-barrel
TRUCK SERIES APPLICATIONS								
AS STANDARD EQUIPMENT	R10 (Corvair 95)	C10-50; L50; K10-20, P10	P20-30	C, L, T60, 60-H	——	——	C, L, M, T80	——
OPTIONAL AT EXTRA COST	——	——	——	C10-50; L50; K10-20	C10-50; L50; K10-20	C, L, T60, 60-H	——	C, L, M, T80

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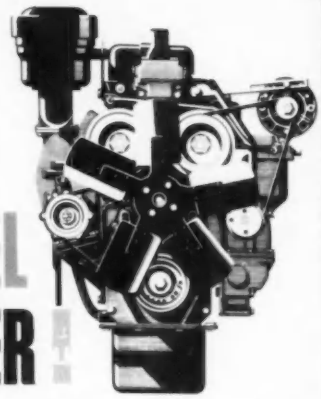
NEW DIESEL POWER



For '62, Chevrolet offers high torque diesel performance and economy—new money-making might for medium-duty trucks! With the rugged General Motors 4-53 Diesel engine, all the performance and economy advantages of diesel power can now be realized in full in this lighter weight class. This is the engine that has set new standards in the diesel power industry, with compact proportions, lightweight toughness and high performance combined to the highest degree. And the fuel economy, low upkeep and day-after-day dependability it delivers in hard-pressed, high-mileage operation more than live up to traditionally high diesel engine standards. Here's an engine that's designed to quickly pay for itself and cut operating costs throughout the life of the truck.

ENGINE SPECIFICATIONS AND PERFORMANCE DATA

Model	General Motors 4-53
Type	Two-Cycle Diesel
Displacement	212.3 cu. in.
Number of Cylinders	4
Bore & Stroke	3⅞ in. x 4½ in.
Compression Ratio	17 to 1
Maximum Brake Horsepower	130 @ 2800 RPM
Maximum Gross Torque	271 ft.-lb. @ 1500 RPM
Piston Speed @ 2800 RPM	2100 ft. per minute

NEW EASY-VIEW STYLING

PRACTICAL NEW TRUCK APPEARANCE!

Thanks to Chevy's handsome new styling, drivers will *see* better on the job! Newly designed hood slopes neatly down at front and sides for maximum up-front visibility. It's a functional design that virtually eliminates blind spots for greater driver safety and efficiency.

NEW JOB-MATCHED EFFICIENCY

MORE MODELS TO HANDLE MORE KINDS OF JOBS!

DETACH AND SAVE THIS HANDY BUYING GUIDE

C1534 Fleetside Pickup ▾

C1504 Stepside Pickup ▴

K1534 4-WD Fleetside Pickup ▾

C1405 7½-ft. Panel ▾

C1416 Suburban Carryall ▾

P1345 Step-Van 7 ▾

P2545 Step-Van ▾

JOB-MATCHED LIGHT-DUTY MODELS FOR '62

CHEVIES FOR EVERY CHORE . . . READY TO MATCH YOUR WORK WITH PERFORMANCE THAT PUTS YOU DOLLARS AHEAD EVERY DAY IN THE WEEK!

Mention almost any light-duty job . . . and you'll find that Chevy for '62 offers a truck that's more than a match for it. Here's a *long* lineup of Jobmaster trucks, cost choppers for every chore with GVW's up to 10,000 lbs., sleek new Easy-View styling, more 6-cylinder power, advanced short-stroke V8's, the latest in tough truck components—everything that adds up to more economical, *more profitable performance*. Pick from *conventional* models with Independent Front Suspension, a proved paying advantage that saves on truck wear, cargo damage and maintenance expense . . . from *Forward Control* models that offer the latest in dollar-saving efficiency on stop-and-go runs . . . from go-anywhere 4-wheel drives that give up to twice the traction . . . from a complete roster of rugged light-duty Jobmasters, each one out to save extra dollars for owners in '62!

16 JOB-MATCHED PICKUPS

You get a new wider choice of 16 Chevrolet pickups for '62—6 handsome high-capacity Fleetside models, 8 convenient Stepside models—and a pair of rear-engine Corvair 95's, too! These huskies come equipped with *big* bodies (up to nine feet long) to handle outsized loads with ease. Sturdy close-fitting tailgates on all models reduce spillage of bulk cargoes; tough select-wood floors, recessed steel skid strips, and a low close-to-the-road build make loading and unloading a cinch. You'll go *first class* in any one of these pickups . . . get the benefit of sturdy-built construction, big comfortable cab—plus everything else you need to match your work with a brand of performance and economy that will save you time and money every day!

JOB-MATCHED ENGINES & COMPONENTS

Whatever you look for in a truck, Chevy's got plenty of it for '62! *Cabs* are big and roomy; built solid and sealed tight. *Frames* are of premium-quality steel with extra reinforcements. Rugged *rear axles* match your toughest jobs with top performance and economy. *Synchro-Mesh and fully automatic transmissions* are available for most models. Large diameter *brakes* assure safe, sure stops and long brake life. Smooth hydraulically actuated *clutches* match engine torque to work harder, last longer. *And there's never been so much light-duty power.* Standard is the famous fuel-saving High Torque 235 Six; optional-at-extra-cost power plants are the big hard-working High Torque 261 Six and short-stroke 283 V8.

ROOMY, RUGGED PANELS! Best choice for big loads—big savings, too—Chevy's panels come in 7½- or 10-ft. body lengths. Load spaces are 175 or 231 cubic feet, with payload capacities of up to 3,000 lbs. Cargoes have the protection of tight weather-sealed bodies and Chevy's cradle-soft Independent Front Suspension.

CARRYALLS FOR WORK LOADS OR LOADS OF FUN! Here's your answer if you mix business with pleasure—a 1962 Suburban Carryall! Combining station wagon styling with practical panel truck utility, the Carryall carries up to 8 adults or 950 lbs. of cargo with the seats removed. Four-wheel drive is also available for tough go-anywhere jobs.

STURDY LIGHT-DUTY STAKES! With room and brawn aplenty, these '62 Chevy stakes come with bodies of 8- or 9-ft. lengths to handle your bulkiest loads. Wheelbase lengths range from 127 to 133 inches with GVW's as high as 10,000 lbs. Tough wood bodies are extra durable, joined together by recessed steel bolts.

CHASSIS-CABS FOR MANY BODIES! Available for many special bodies, '62 Chevy light-duty chassis-cabs come in cab-to-axle lengths of 42, 54 or 60 inches. Featuring Independent Front Suspension and a wide choice of power, you can tailor these Chevies exactly to your job needs.

EFFICIENT STEP-VANS AND FORWARD CONTROL CHASSIS! Here's efficiency and economy for your stop-and-go runs—route-ready Step-Vans with bodies 8, 10, and 12 feet long and GVW ratings from 5,600 to 10,000 lbs. Large, roomy interiors and convenient sliding side doors make loading and unloading a breeze. Six Forward Control Chassis are also available for special body installations.

HANDY STEP-VAN 7! New walk-in convenience for light-duty route deliveries! You get a 7-foot body—211 cu. ft. of load space—astride an easy-handling 102-inch wheelbase. Power plant is the gas-saving High Torque 235 Six. And Chevy's Independent Front Suspension saves truck wear, reduces maintenance, cargo damage and driver fatigue.

GO-ANYWHERE 4-WHEEL-DRIVE CHEVIES! Chevy's 4-wheel drive gives you up to twice the traction to dig in and go where the going's roughest. You shift from 2- to 4-wheel drive and back again with just the flick of a lever. Available on pickups, panels, chassis-cabs and Suburban Carryalls.

DETACH AND SAVE THIS HANDY BUYING GUIDE

OWNER-PROVED CORVAIR 95 EFFICIENCY

QUALITY IS THE KEY WORD HERE! Introduced a year ago, Corvair 95 pickups and Corvan have shown owners everywhere a brand of cost-cutting quality that's unique in this truck class. There's lasting worth in every one—starting with a sturdy build that features rugged unitized body-frame construction and tough double-walled body side panels, durable High Torque 145 Six engine that never needs water or antifreeze, low-maintenance unitized engine and transaxle drive (Unipack), smooth-going 4-wheel independent suspension (2,500-lb. rated capacity, front and rear!), to mention just a few! With a lineup of great features as long as your arm, these 1962 Corvair 95's are as *tough* as they are efficient—a fact they've amply demonstrated on scores of jobs the country over.

EFFICIENCY *never meant so much!*

Here are trucks that offer more cargo space for their size and weight than anything that's ever taken to the road. With a compact, *unitized* power train, the major portion of the chassis need accommodate only cargo and cab. The roomy Corvair 95 cab takes up little more than one third of the overall length . . . *and all the rest is load space,* over 9 feet of it, astride a nimble 95-inch wheelbase. And, with the load space located midships, truck and load weight is distributed *evenly*, which results in less strain on chassis and tires—performance that stays trouble-free longer.

CORVAN PANEL

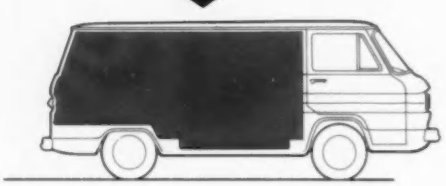
• Built for bigger earnings! • *Load space* 191 cu. ft. big! • High 1,700-lb. payload capacity! • *Big* double doors that open 4′ 5″ wide (right-side doors standard; left-side doors optional*). Wide-opening double rear doors! • Easiest loading—low 16¼″ side loading height! • High 4½-foot interior height for convenient cargo handling! • Extra ruggedness with integral body-frame design! • Better economy and traction provided by High-Torque 145 Six at rear! • Nimble maneuvering through short 95-inch wheelbase and smooth independent 4-wheel suspension! • Comfortable driver compartment with single driver's seat or optional* 3-man or right-hand auxiliary seat!

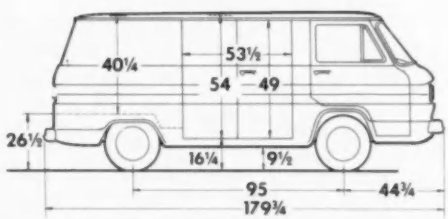
RAMPSIDE AND LOADSIDE PICKUPS

• More load space than conventional half-tonners! • Full-width pickup box gives 80 cubic feet of load space! Cargo capacity up to 1,900 lbs.; 4,600-lb. GVW! • Deep-well cargo area midships for bulky loads! • Low 16¼″ floor height saves work when loading! • Optional (extra cost) flat floor gives 37 sq. ft. of flat loading area, plus cargo area underneath! • Engine, transmission and axle combined in one compact unit at rear for maximum efficiency, easy servicing! • Sturdy integral body-frame design! • Independent 4-wheel suspension! • Short wheelbase and turning radius for easy handling! • Plenty of comfort in spacious 3-man cab!

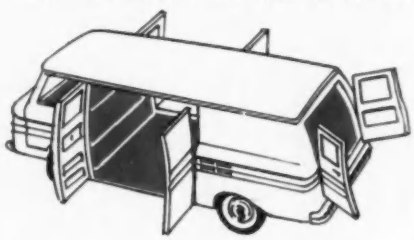
**Extra cost*

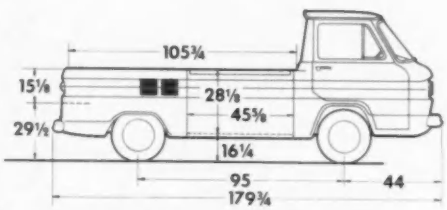
DRIVER'S UP FRONT ENGINE'S IN THE REAR . . . ALL THE REST IS LOAD SPACE!





Big Corvan side doors expose a 53″ x 49″ opening. Double rear doors for added loading ease! Right-side doors standard; left-side doors optional, extra cost.





Exclusive Rampside loading ramp allows you to roll on heavy loads, improves working efficiency!

R1254 Rampside Pickup ▲

R1205 Corvan ♥

DETACH AND SAVE THIS HANDY BUYING GUIDE

C5309 12-ft. Stake ▲

D6503 with 16-ft. Van Body ▲

T6303 with Van Semi-Trailer ▼

JOB-MATCHED MEDIUM-DUTY MODELS FOR '62

MORE EARNING POWER THAN EVER BEFORE

There's a bigger, stronger High Torque 327-cu.-in. V8 for Series 60 . . . new diesel power . . . famous work-proved 6's and V8's for every truck in this *long* lineup for '62! Every model gives you new Easy-View styling for better appearance, greater safety . . . advanced Independent Front Suspension to smooth the way to greater profits . . . a sturdy, comfortable cab to make work easier for the driver. From stem to stern, these new medium-duty Chevies are packed with tough truck components that last and save you more money in the long run. They're built to *stay* on the job and *pay* on the job—to deliver a brand of rock-ribbed performance that can't be beat in this weight class.

THREE CAB TYPES—Three basic cab types and a wide choice of wheelbases and components enable you to match the truck to your job ideally. Choose from 36 Conventional models; 18 Low Cab Forward Chevies (93½ inches from bumper to back of cab); or from 8 Jobmaster Tilt Cab trucks (only 72 inches from bumper to back of cab).

NEW DIESEL MODELS—Now you can dieselize your high-mileage medium-duty jobs with a model made to measure for them, and take full advantage of diesel power's long-lasting, big-saving ways. Chevrolet D60 Diesels come in 5 wheelbase lengths with GVW's as high as 19,500 lbs. In all models, transmission and rear axle gearing is tailored to the diesel's power output characteristics for best performance under all conditions.

CHEVROLET SERIES 60 DIESEL SPECIFICATIONS

Model	Wheelbase; Cab-to-Axle lengths	**Model**	**WB**	**CA**
		D6103	133″	60″
		D6203	145″	72″
		D6303	157″	84″
		D6503	175″	102″
		D6803	197″	124″
Gross Weight Ratings	GVW	15,000 to 19,500 lb.		
	GCW	32,000 lb.		
Axle, Front	Type	Independent Suspension		
	Rating	5000 lb.		
Axle, Rear	Make & Model	Chevrolet		
	Rating	15,000 lb.		
	Type	Single- or 2-Speed*		
Brakes, Service	Standard	Vacuum-Hydraulic		
	Optional	Air-Hydraulic*		
Engine	Make & Model	General Motors 4-53		
	Type	2-Cycle Diesel		
	Gross Horsepower	130 @ 2800 rpm		
	Gross Torque	271 lb-ft @ 1500 rpm		
	Clutch Dia.; Facing Area	13″; 178 sq. in.		
Generator	Type	A.C. Delcotron		
	Volts; Amps	12V; 52A		
Tires	Base Size	8-22.5/8PR Tubeless or 7.50-20/8PR Tube*		
	Maximum Size	10-22.5/10PR Tubeless* or 9.00-20/10PR Tube*		
Transmission	Make; Type	Clark 264VO; 5-Speed		
Wheels	Base	Chevrolet Disc		
	Optional	Budd 6-stud Disc* or Cast*		

*Extra-cost equipment.

NEW HIGH TORQUE 327 V8 ENGINE

Available at nominal extra cost for Series 60 models, Chevy's new High Torque 327 V8 engine brings 28% more net torque for extra performance ability on medium-duty jobs where heavy loads, difficult terrain or tight schedules place unusually severe demands on equipment. Traditional Chevy heavy-duty V8 durability stems from components like tough Moraine M 400 bearings, vacuum-spinner 3700 rpm governor, hard-faced exhaust valves, and self-adjusting hydraulic valve lifters.

FAMOUS 6-CYLINDER ECONOMY

Top fuel economy is what you get with either of Chevy's medium-duty truck 6's—the High Torque 261 Six or High Torque 235 Six. Featuring free-breathing valve-in-head design, these engines give you *efficient* power and extra economy by way of features such as standard oil filter, extra-duty alloy bearings oil bath air cleaner, forged steel crankshaft and many more.

WORK-PROVED COMPONENTS

A 1962 Chevy can take it, thanks to tough tailored-to-the-job components like these: tough-built frames with massive K-brace crossmembers; *wide range variable-rate rear springs*; *smooth 4- and 5-speed Synchro-Mesh transmissions* standard; *rugged rear axles* with durable hypoid gearing, capacities up to 17,000 lbs.; *big, safe brakes for all models* (vacuum-hydraulic boosters standard). When Chevy builds a truck, it's a *truck!*

DETACH AND SAVE THIS HANDY BUYING GUIDE

M8503 Tandem with 10-Yard Body

NEW WIDER CHOICE OF CHOICE EQUIPMENT

JOB-MATCHED HEAVY-DUTY MODELS FOR '62

Here are the best of the big ones—a full range of heavyweights, rounding out the Chevrolet fleet for '62. Your choice includes lean-muscled Series 60-H models, brawny Series 80 models and mountain-moving Series M80 tandems. Chevrolet High Torque 6-cylinder or V8 power (or diesel power in 60-H models) pays off in money-saving payload performance on all kinds of heavyweight hauls. And in chassis construction Chevrolet's 1962 heavy-duty lineup leads the industry with advanced Independent Front Suspension system providing a smooth ride, sure roadability and ruggedness to spare. Variable-rate rear suspensions for all single-axle heavyweights offer wide range action, a better ride empty, plus plenty of capacity.

1962 TOUGH-TASK TANDEM MODELS

—Three super-rugged six-wheelers make up Chevy's M80 tandem Series; measuring 84, 102 and 120 inches cab to axle, they offer broad coverage of the tandem field. They're built on extra-tough chassis, with smooth-riding Chevrolet Independent Front Suspension as standard equipment, and an advanced-design Eaton-Hendrickson 30,000-lb. tandem bogie back under the load. Chevy's High Torque V8 power can be teamed with transmissions to match severest on- or off-road jobs. Power steering is standard for easier handling when the going's tough.

NEW SERIES 60-H GAS AND DIESEL TRUCKS

—Rugged heavy-duty build . . . money-saving 6-cylinder power— that's what you get in every Series 60-H model. Standard power is the High Torque 261 Six; and, for 28% more working torque, the High Torque 327 V8 is optional at extra cost. *Also new for '62, tough 60-H Chevies are available with the special economy and low maintenance performance of diesel power, provided by the husky General Motors 4-53 Diesel.* Every model features big-load brawn built in throughout: ride-smoothing 7,000-lb. Independent Front Suspension system, rugged new 17,000-lb. rear axles, high 23,000-lb. GVW to master tough jobs like nothing else in this weight class!

Yours for the asking . . .

FREE INFORMATION

Use this postpaid reply card to get descriptive literature and specifications on 1962 Chevrolet trucks to match your job.

CHEVROLET

1 Full-Line Catalog ☐
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3 Pickups ☐
4 Panels & Delivery Models ☐
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9 Tandem Axle Models ☐

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Yours for the asking . . .

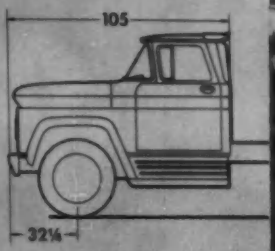
FREE INFORMATION

Use this postpaid reply card to get descriptive literature and specifications on 1962 Chevrolet trucks to match your job.

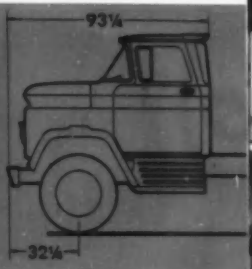
CHEVROLET

CHOOSE FROM 3 CAB TYPES

Conventional



Low-Cab Forward



Tilt Cab

T8603 with Refuse Body

DETACH AND SAVE THIS HANDY BUYING GUIDE

BIG TRUCK POWER AND COMPONENTS

NEW HIGH TORQUE 409 V8—Here's the most powerful Chevy gas engine yet, ready to turn out a mountain-moving 352 ft.-lbs. of *net* torque and 213 *net* horsepower to help your biggest loads moving! Built-to-last features like inside-outside air intake system, hard-faced exhaust valves with Roto-Coil valve rotators, self-adjusting hydraulic valve lifters (and many more) assure long engine life. Optional, extra cost, Series 80.

STANDARD HIGH TORQUE 348 V8—Standard power for Chevy's Series 80 heavyweights is the big, brawny High Torque 348 V8, with 180 net horsepower and 300 ft.-lbs. of net torque. It's especially designed to move big loads at lowest possible cost with a big reserve of stamina, highest quality components. It's a premium engine throughout—in bearing and valve materials and in lubrication and cooling.

HIGH-CAPACITY LADDER-TYPE FRAMES—Deep-down durability starts right here—deep-section side rails of extra-tensile-strength steel are joined by massive ladder-type cross-members. The result is a frame that combines high strength and resilience to handle highest capacity loads.

KING-SIZED BIG TRUCK BRAKES—Top stopping power from job-tailored brakes ranging up to 15" x 3", front, and 15" x 7", rear, (Series 80 models),—up to 642 square inches of lining area. Standard diaphragm-type vacuum-hydraulic boosters deliver a big bonus of braking power without loss of natural pedal feel. Air-hydraulic or full-air brakes are optional at extra cost.

HEAVY-DUTY TRANSMISSIONS—Smooth-shifting 4- or 5-speed Synchro-Mesh transmissions are standard in all heavy-duty Chevies. Close-ratio 5-speed units are also available as well as extra-cost 3- or 4-speed auxiliary units for tandem models. Also available at extra cost is work-saving Powermatic.

OPTIONAL I-BEAM FRONT AXLE—For the most extreme off-road duty, 9,000- and 11,000-lb. capacity I-beam axles are optional at extra cost for Series C80, L80 and M80 tandem models.

get extra performance for your dollars with

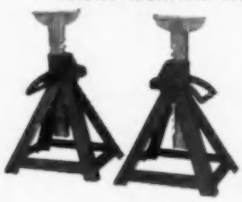
HEIN-WERNER HYDRAULIC SERVICE JACKS

new, modern M, 2-ton jack lifts to 25 inches — only $157.00 suggested dealer price

dependable G.G. 4-ton jack has rapid two speed pumping action only $229.50 suggested dealer price

Hein-Werner 2 and 4-ton Hydraulic Service Jacks offer the economical, trouble free lifting power you need to capitalize on your shop potential to the fullest. Handle everything from passenger cars right up to medium-heavy trucks. Long, sleek chassis are extra sturdy, better balanced and easier to maneuver. Dual pistons with automatic cut-off valve make lifting fast, effortless, and positive. Stop in hydraulic unit prevents damage due to ram overtravel. Large white saddle for quick spotting. Handle pumps full 90° stroke and has three locking positions. Roller bearings in front wheels; ball bearing casters. Positive gear action release valves, *plus* Hein-Werner "Quality First" design and performance. See your H-W Jobber, or write us for full facts.

HEIN-WERNER SAFETY STANDS PROTECT MECHANICS



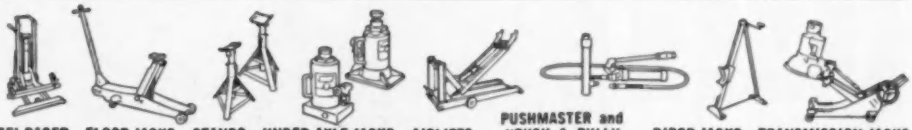
Instantly adjust to desired working height; lock securely in place automatically. Offer stable, proper load support for *safer* under-vehicle work; relieve jacks for other lifting jobs. Every H-W SAFETY STAND factory tested to support 50% overload. Available in pairs from your H-W Jobber now at these economical suggested prices:

Model CS-211, 2-ton capacity, per pair: $17.50
Model CS-5.15, 5-ton capacity, per pair: $24.50
Model CS-7.20, 7-ton capacity, per pair: $35.80

HEIN-WERNER HYDRAULIC HAND JACKS

Safety-engineered for powerful, dependable, easy lifting. Available in capacities of 1½, 3, 5, 8, 12, 20, 30, 50, and 100-tons — 12-ton models and larger have positioning handles; all jacks factory tested at 1½ times rated capacity to assure maximum safety and performance. Order *now* from your H-W Jobber.

Hein-Werner CORPORATION
WAUKESHA, WISCONSIN



'55' PACER | FLOOR JACKS | STANDS | UNDER AXLE JACKS | AIRLIFTS | PUSHMASTER and "PUSH & PULL" | BIPOD JACKS | TRANSMISSION JACKS

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Nation's largest manufacturer of heavy-duty and specialized engine parts—

NEW GOULD-NATIONAL ENGINE PARTS DIVISION

In creating its new Engine Parts Division, Gould-National combined under one corporate roof the brands, products, services and facilities of these wholly-owned subsidiaries:

Wilkening Manufacturing Co., Philadelphia, manufacturers of Pedrick® piston rings and castings.

White Machine Works, Eau Claire, Wisconsin, manufacturers of Superior-Arrowhead cylinder sleeves, sleeve assemblies, pistons, piston pins, Burd piston rings, valves and valve train parts, foreign car engine parts and filters.

Gillett & Eaton, Lake City, Minnesota, piston and casting specialists of cast iron, aluminum alloy, Vanasil® aluminum alloy pistons and specialized engine parts.

Arrow Head Steel Products, Howell, Michigan, manufacturers of aluminum pistons, connecting rods and other castings.

Now, Gould-National, the nation's largest producer of automotive replacement batteries, is also the nation's largest basic manufacturer of heavy-duty and specialized engine parts. The Division is the largest one stop source for the most complete line of engine parts available from one manufacturer. It is the only engine parts manufacturer with both iron and aluminum casting and machining facilities.

By utilizing the efforts of one combined sales force, the customer will benefit from greater sales-service efficiency, more concentrated field coverage.

Product improvement will result from the formation of a special team in the Gould-National Engineering and Research staff. It is the Gould-National way of assuring continuing top quality and improved product performance.

New engineering developments, manufacturing and production techniques from all areas within the Division will benefit all customers, no matter what the product may be.

This is the Gould-National Engine Parts Division—the nation's newest parts manufacturing group with over two centuries of combined experience.

Need heavy-duty engine parts? Automotive engine parts? Foreign car engine parts? Parts for such specialized applications as air and refrigeration compressors? Need complete and modern facilities for aluminum and iron castings? If your specifications call for the best of these, if you need them fast and need them right . . . turn to . . .

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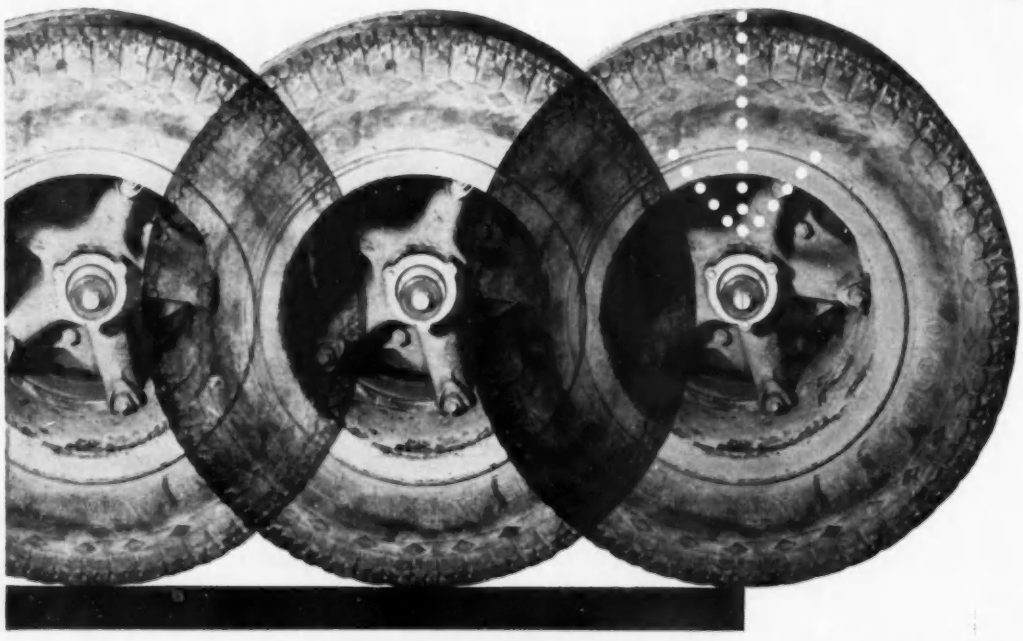
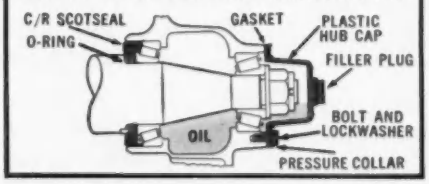
ENGINE PARTS DIVISION
GOULD-NATIONAL BATTERIES, INC.
St. Paul 1, Minnesota

now... C/R SCOTSEAL™ for most heavy duty axles on the road today!



HERE'S HOW IT WORKS

All elements shown in solid green are included in the SCOTSEAL Kit. Unit illustrated: Fruehauf No. 5 axle.



Visit C/R booth 513-515 during Fleet Maintenance Exposition, Oct. 23-26, New York Coliseum

■ What's big news in the truck industry—it's the C/R SCOTSEAL! SCOTSEAL is the trailer axle oil sealing kit that gives you oil lubrication of wheel bearings for outstanding advantages.

Now . . . C/R SCOTSEAL can be used with all these axles: FRUEHAUF No. 5 (to 1960 early and 1960 late to current); 18,000 lb. CLARK; NABORS "NU"; SHULER A-19 B&C; STANDARD FORGE A-17 18,000 lb.; TIMKEN 17,000 lb.; 18,000 lb. TK 500 Series.

C/R SCOTSEAL brings you all these economies—1. No more grease repacks—oil lasts from one brake reline to next. 2. No burned-out bearings due to delayed repacking. 3. Less drag, lost power and fuel waste because SAE-30 oil remains free-flowing summer and winter. 4. More complete protection for brake blocks against grease leakage.

C/R SCOTSEAL is available in kit or individual parts and is rapidly gaining approval as standard equipment with trailer and axle manufacturers.

Try C/R SCOTSEAL and see the savings! Some fleet operators report that it costs up to $50 (grease and labor) to repack 2 axles per 10,000 miles. SCOTSEAL shaves this considerably.

WRITE FOR SCOTSEAL BULLETIN! This brochure gives you all the details on SCOTSEAL. Write C/R today or ask your C/R supplier.

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"BETTER BUILT" TO MEET YOUR NEEDS

To meet new truck markets and buyer needs for standard truck bodies equipped for a greater variety of mobile services and delivery needs, Boyertown production facilities are keeping pace with its newly completed continuous conveyorized assembly-line plant for the production of the standard line of "Better Built" truck bodies, from the manufacture of small parts and assemblies through the finished truck bodies.

Boyertown's complete line of truck bodies, available with 6′ to 18′ long loadspace lengths, includes the model you need for your particular delivery or mobile service.

Boyertown truck bodies are "Better Built" of All High Strength Low Alloy Steel providing more strength having less weight for economical operation and greater resistance to corrosion having longer profit-returning life.

Service proven body features recognized by individual and fleet owners alike meet the 3-way test of value conscious Buyers, discriminating Drivers and efficient Maintenance Men.

Reserve "pool" truck chassis of your choice on hand at Boyertown and increased production facilities permit faster delivery to you.

Whether you buy or lease the truck bodies for your operation—one truck or a fleet of 100—contact your Boyertown Sales Engineer who will gladly assist you in selecting the "better built" body that will serve your needs best!

BETTER BUILT TRUCK BODIES SINCE 1872

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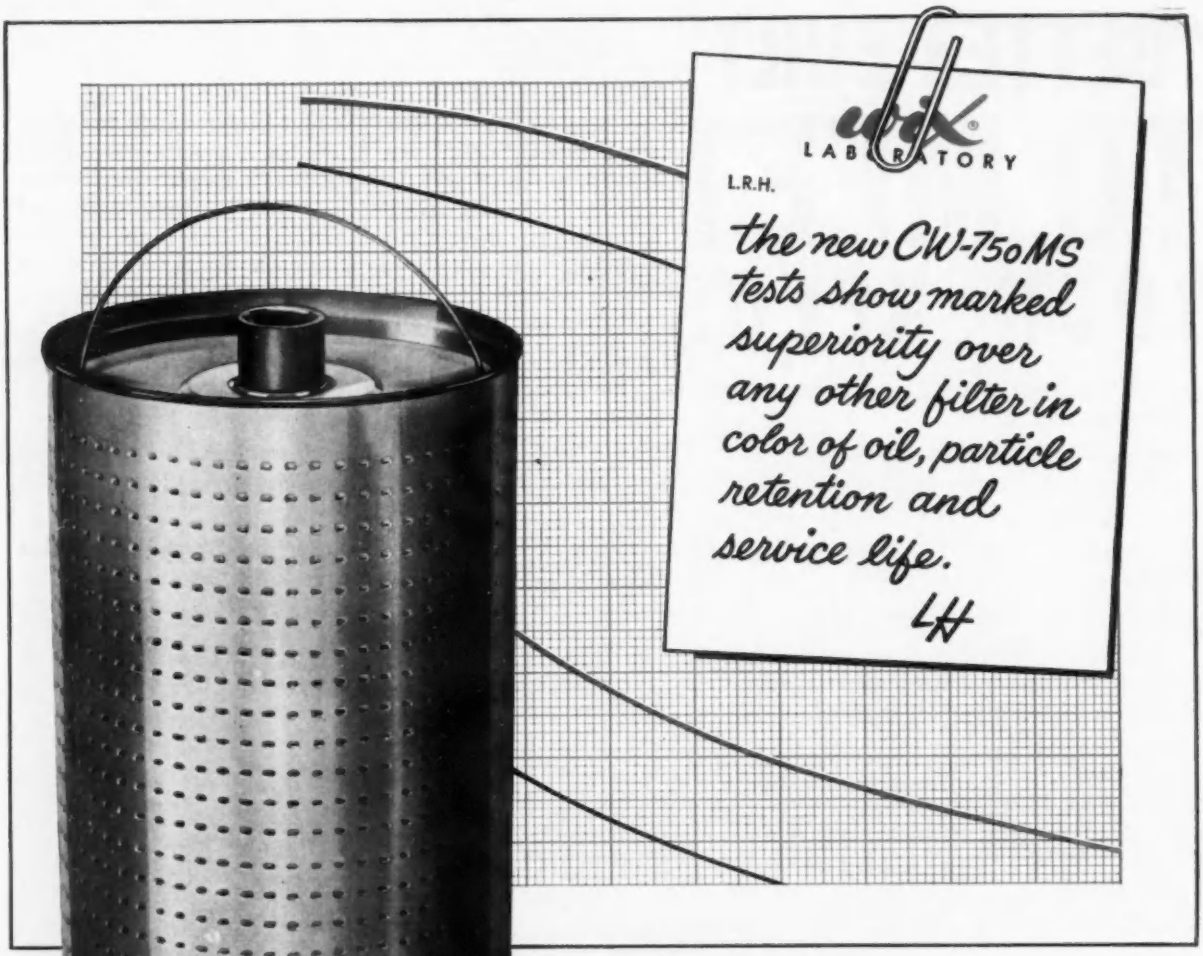
BOYERTOWN AUTO BODY WORKS, Inc.
BOYERTOWN, PENNA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L.R.H.
the new CW-750MS tests show marked superiority over any other filter in color of oil, particle retention and service life.
LH

WIX CW-750MS Lube Oil Filter Cartridge for Diesel Engines.

NEW FOR DIESELS WITH 750 FILTERS

Here's the filter Diesel men have been waiting for. More than four years of laboratory research and development, plus untold miles of highway test, prove that you no longer have to be content with dark and dirty oil. The new WIX CW-750-MS is unconditionally guaranteed to keep even the most heavy duty lubricating oils clean *and clear* . . . or your money back!

Filtration of today's oil presents a special challenge due to modern detergent additives, heavy duty schedules and close tolerance engines. In the preservation of essential properties of the oil and the positive elimination of all harmful contaminants, this WIX Cartridge is in a class all by itself—a premium filter at the regular price!

If you believe in Preventive Maintenance and are interested in a better filter, for your engine's sake ask your local WIX wholesaler for all the facts or write today for complete information and prices.

wix® FILTERS

WIX CORPORATION • GASTONIA, N. C.

In Canada: Wix Corporation Ltd., Toronto
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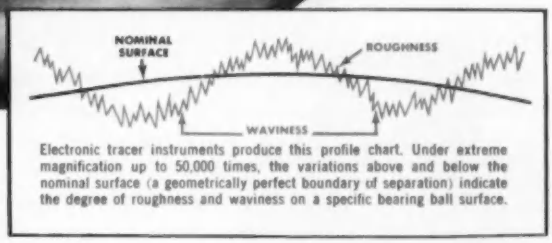

Electronic tracer instruments produce this profile chart. Under extreme magnification up to 50,000 times, the variations above and below the nominal surface (a geometrically perfect boundary of separation) indicate the degree of roughness and waviness on a specific bearing ball surface.

BCA's roll smoother because bearing surfaces *are* smoother . . . controlled with superprecise electronic instruments

The smallest irregularities on bearing ball surfaces can cause vibration, internal friction, and wear. That's why BCA includes an extra-careful inspection for surface roughness and waviness as part of quality control.

These irregularities are so small that they have little or no effect on dimensional trueness as measured to the millionth of an inch—but *can* result in shortened bearing life.

Therefore, special electronic instruments have been developed to measure surface irregularities. Stylus-type tracers record them on profile curves (see illustration).

This is just one phase of quality control at BCA . . . one reason why the *complete* line is relied on for smoother, longer performance by so many automotive service technicians. Call your BCA bearing jobber for immediate delivery of the types and sizes you need.

BCA BALL BEARINGS

FEDERAL-MOGUL SERVICE

Division of Federal-Mogul-Bower Bearings, Inc. • Detroit 13, Michigan

AN "ORIGINAL" STORY BY HOLLEY!

Thirty-Eight Engines in Leading 1961 Trucks Have Holley Carburetors as *Original Equipment*

Efficient performance under all conditions of road, load and weather, maximum fuel economy, and—above all *dependability*—are qualities truck manufacturers demand in every carburetor. Ability to deliver precision-built carburetors which meet these exacting requirements is the reason why Holley Carburetors are *original equipment* on 38 of the finest truck engines available in 1961, including those of one make not shown.

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IT WILL PAY YOU IN PERFORMANCE TO REPLACE WITH *GENUINE* HOLLEY PARTS—MADE TO *ORIGINAL EQUIPMENT* SPECIFICATIONS!

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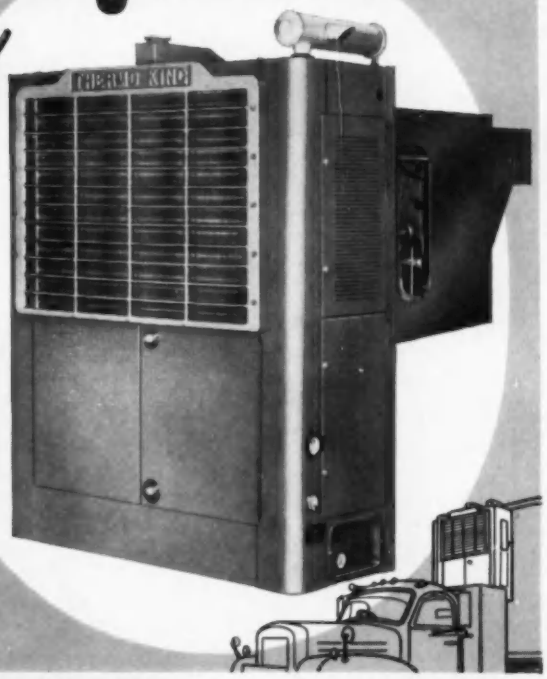
"meet our best traveling salesman!"

"A great performer in the field! . . . thoroughly tested and proven 'up front' refrigeration-heating unit that's always on the job dependably protecting the load . . . protecting your profits!"



now engineered for even greater efficiency

NEW . . . Greater capacity than ever!
. . . Improved, Simplified Design & Component Accessibility!
. . . Lighter-in-Weight!

THERMO KING model SRL SUPER CAPACITY

ONE-PIECE FACTORY ASSEMBLED REFRIGERATION-HEATING UNIT

NEW! SIMPLIFIED UNITIZED CONTROL PANEL—Electrical relay controls and switches are assembled in one panel equipped with quick disconnect plugs for instant replacement and service.

NEW! SUPER EFFICIENT HEAT CIRCULATION & DEFROSTING—Heating capacity is boosted by new, specially designed accumulator and super-heating coil. Automatic defrosting controlled by a new air pressure defrost switch and shutter combination.

NEW! SAFETY CONTROLS BUILT IN—Starter-generator circuit breaker switch, cranking limit switch, low oil pressure cutout, high engine temperature cutouts are standard built-in protection for your Thermo King equipment.

NEW! IMPROVED REFRIGERATION SYSTEM DESIGN—Exclusive super compressor and coil design. Easy access to all components for maintenance requirements.

Add these outstanding new features to the tested and proven Model SRL which already features the exclusive one piece "up front" design, money-saving stop and go operation, and you have further verified Thermo King's claim of the most refrigeration and heating capacity per dollar . . . per pound. Model SRL is factory assembled and tested—dependability Thermo King backs with the most liberal warranty in the refrigeration industry!

There is a THERMO KING unit designed to hold any temperature or to maintain any range of temperatures under any transport condition

FOR DETAILS, MAIL COUPON TODAY!

THERMO KING CORPORATION, 306-C W. 90th St.
Minneapolis 20, Minnesota

Please send us complete information on:

☐ Thermo King Model SRL
☐ Complete line of Thermo King transport refrigeration units.

Firm_____

By_____

Address_____

City_____ Zone_____ State_____

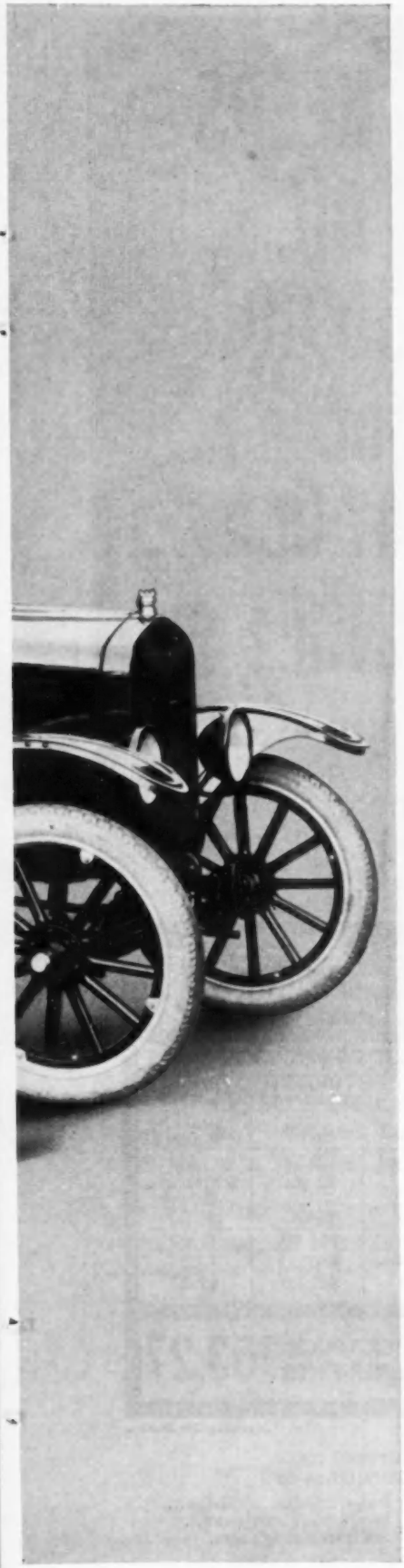
INTERNATIONAL PARTS AND SERVICE ORGANIZATION

THERMO KING CORPORATION

World Leader in Transport Refrigeration

306-C West 90th St., Minneapolis 20, Minnesota

This Ford "compact" had a 124 inch wheel base, a capacity of 1 ton, a 20 horsepower motor. Its recommended operating speed was a breakneck 15 miles an hour. Front wheel tire size was 30 x 3½; rear wheels 32 x 4½.



What's so new about the "compact" truck?

As far back as 1924, Budd was supplying the first all-steel bodies for this kind of "compact-sized" truck and had already introduced the first steel disc wheel—just two of many pioneering Budd contributions to the automotive industry.

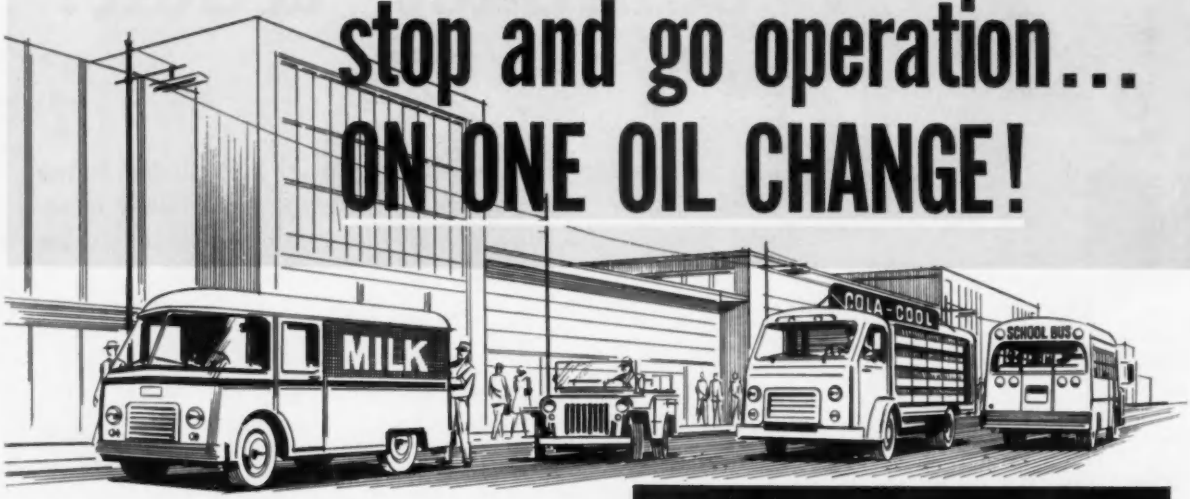
Today, the all-steel body is standard in the industry—and more than 62 million truck wheels have rolled from Budd facilities. The Budd double cap nut dual wheel mounting is specified for all tactical military vehicles. Also, the nation's buses largely rely on this proven mounting for safe, dependable transportation. Only the Budd steel disc wheel is produced in a range of types and sizes complete enough to meet the full needs of the constantly expanding automotive transportation industry. In addition, 9 out of 10 leading American trucks and 20 of the 27 foremost American cars use quality components supplied by Budd.

It is a far cry from the "compact" truck of yesterday to that of today, from the infant automotive industry to today's industrial giant—but the name "*Budd*" still stands for the same thing . . . flexible, pioneering service in providing the automotive industry with superior products and processes. You can be certain that you will find Budd in the cars and trucks of tomorrow.

Budd Automotive

DETROIT 15

LUBER-FINER KEEPS H.D. DETERGENT OIL CLEAN through 10,000 to 15,000 miles of stop and go operation... ON ONE OIL CHANGE!



Fleet operation tests on all makes of trucks have proven that Luber-finer and DIESELPAK® extend oil change intervals by cleaning more detergent-type oil, cleaning it faster and keeping it clean longer—maintaining top lubricating effectiveness for 10,000 to 15,000 miles.

H.D. detergent-type oils *must* be kept clean to maintain lubricating qualities. Luber-finer's patented filtering process and exclusive media remove all impurities, maintain the oil's clarity and color—without removing or adversely affecting the additives. When you equip your fleet with Luber-finer, you know you have clean oil—even with stop and go driving!

Luber-finer pays for its entire installation with savings in only 8½ months. After that you keep the profit of over $50 per truck.* Check your operation with the Luber-finer comparison chart.

For complete information on "How to enjoy more miles of effective filtration... at less cost" contact your Luber-finer distributor or write direct.

PAYS FOR ITS ENTIRE INSTALLATION IN 8½ MONTHS*... AFTER THAT YOU KEEP THE PROFIT!

LUBER-FINER COST COMPARISON CHART

	WITHOUT LUBER-FINER	WITH LUBER-FINER
Miles per oil change	1,000	10,000-15,000
Oil changes per year	12	1
Oil used per year	72 qts.	9 qts. (with 272-C unit)
Cost of oil @ 20¢/qt.	$14.40	$1.80
Cost of labor @ $3/hr.	$36.00	$3.00
Cost of replacement packs	$10.80	$3.03
Cost per truck per year	$61.20	$7.83

YEARLY SAVINGS PER TRUCK EQUIPPED WITH LUBER-FINER $53.27

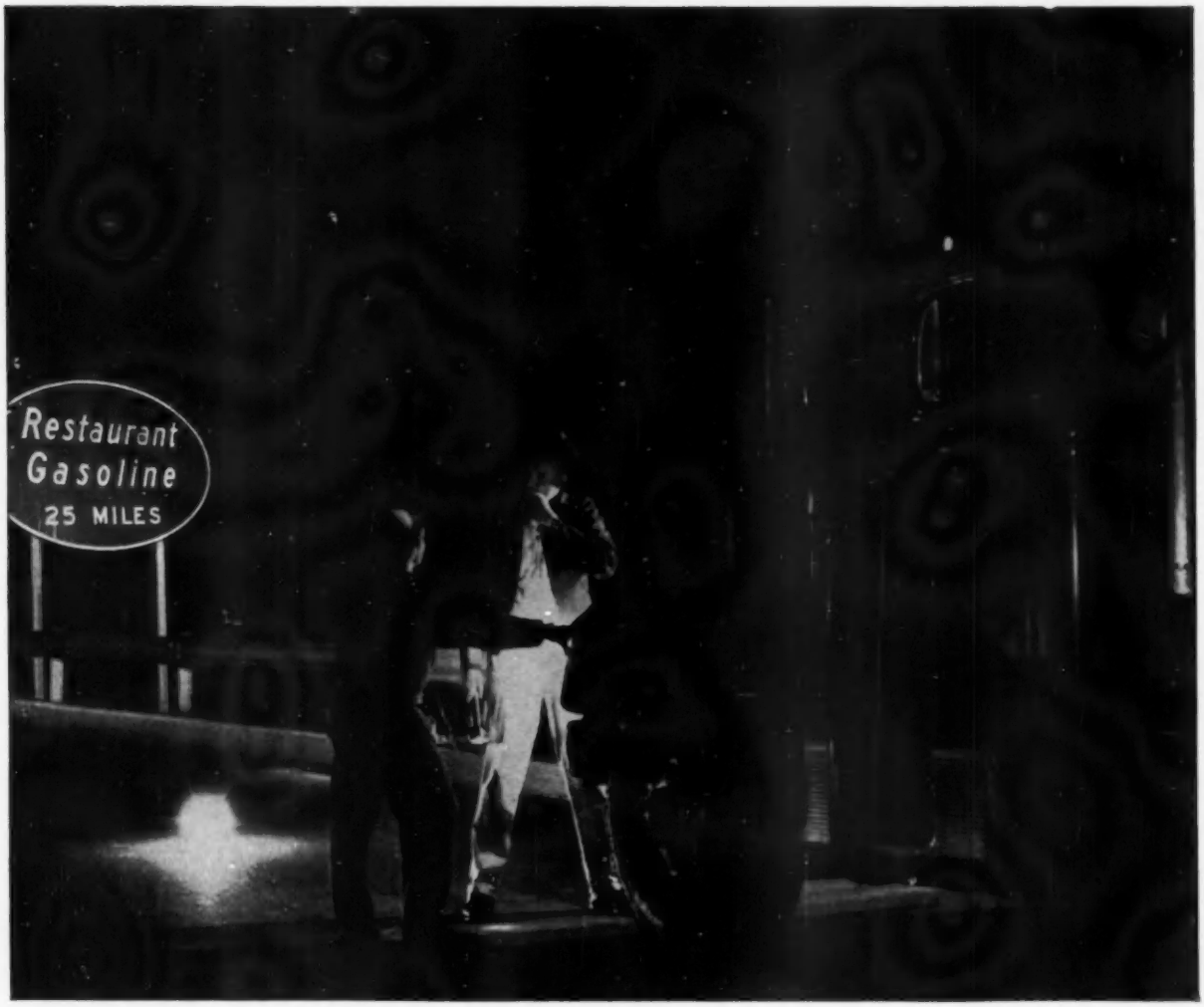
*BASED ON AVERAGE OPERATION

Luber-finer® INCORPORATED

2514 So. Grand Avenue Los Angeles 7, Calif.

APPROVED FOR INSTALLATION ON

Dodge...G.M.C....Chevrolet... Divco...Reo...Diamond T... and other leading trucks.



"TURNPIKES ARE MURDER ON ENGINE BEARINGS"

There's a big difference in engine bearings—a difference that can save you costly delays and repairs. Michigan Engine Bearings are engineered with *Turnpike Toughness:* the durability to stand up under the most gruelling, long, high-speed hauls.

All materials for Michigan Bearings are specially chosen and carefully protecto-treated for maximum fatigue strength, high thermal conductivity, corrosion and oxidation resistance, superior embeddability and surface action. They are machined to tolerances as close as .000125 plus or minus, assuring perfect fit at every point.

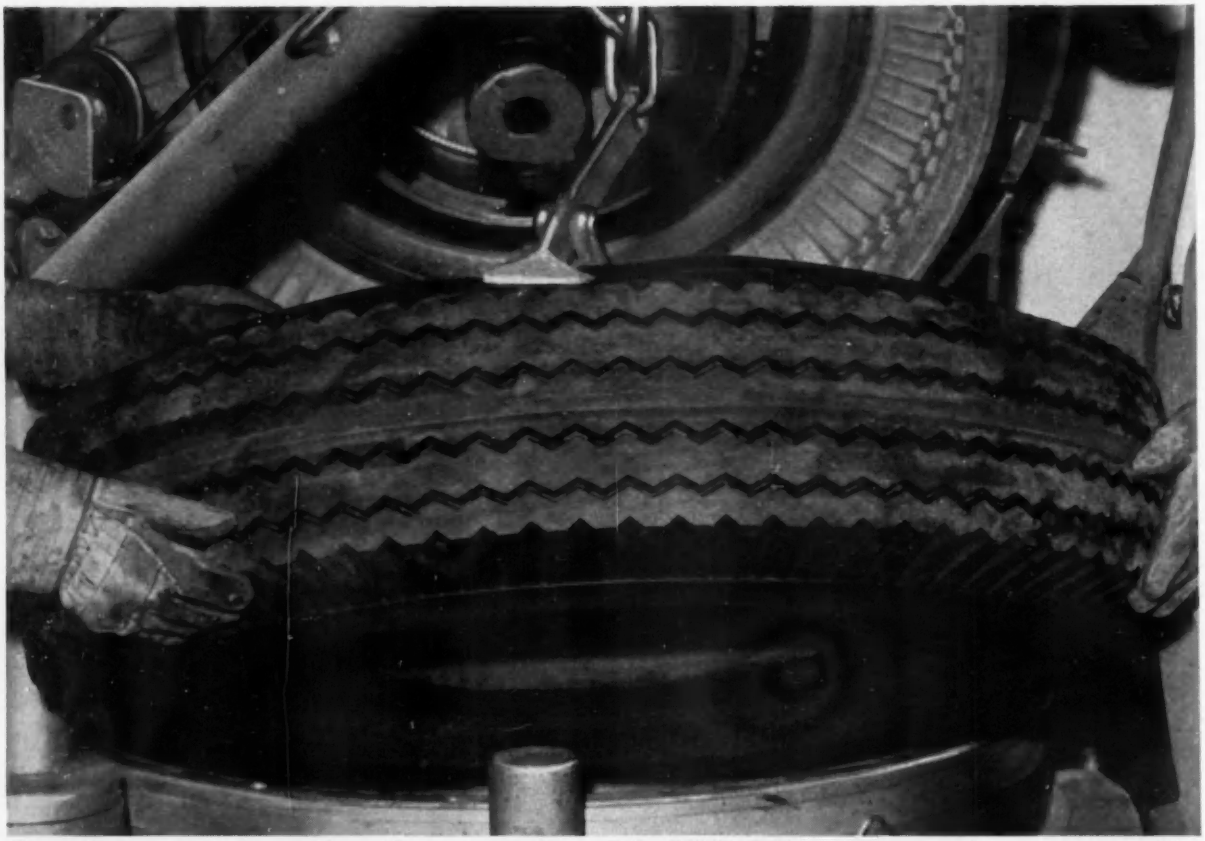
Michigan Engine Bearings for replacement are made by Detroit Aluminum and Brass Corporation —for over 35 years a principal supplier of original equipment bearings for leading automobiles, trucks, buses, and farm equipment.

Insist on "*Turnpike Tough*" Michigan Engine Bearings for all your replacements. They're made to stay on the job!

Michigan

ENGINE BEARINGS

made by **DETROIT ALUMINUM AND BRASS CORPORATION,** Detroit 11, Michigan



Another reason why tires made with NYLON cost you less per mile

NYLON GIVES MANY MORE RETREADS

Truckers who want to cut maintenance costs look at the retreadability of their tires. And performance records of numerous trucking fleets across the country show that not only do nylon cord tires average twice as many retreads as other tires, but that more nylon casings are retreadable. That's because nylon has great impact strength... withstands the high temperatures tires build up on the road... has extra resistance to ply separations, one of the major causes of premature failure... and is stronger than competitive cord after exposure to moisture. ■ Extra mileage because of more retreads is just another good reason why, even though originally nylon cord tires cost a little more, nylon still cuts your cost per mile... and why over 55% of all replacement truck tires sold last year were made with nylon cord.

THE SAFEST, STRONGEST TIRES ARE MADE WITH

NYLON

DUPONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Now... the
158 SERIES
rounds out a
complete new line.

TRACTORS . . . from 45,000 to 60,000 lbs. GCW.

BROCKWAY 50th YEAR 1912 · 1962 MOTOR TRUCKS

New Line

Compact and Power-packed

BROCKWAY

HUSKIES . . . *medium-size . . . economy-wise*

★ COMPACT DESIGN—90" BBC

- Wider choice of power: Gasoline, up to 200 hp; Diesel, up to 160 hp.
- New stronger frame with minimum weight.
- Wide track front axle.
- New cab; fiber glass engine housing.
- Enlarged frontal area and cooling system.
- Set-Aside fenders for easy maintenance.
- New improved front suspension and steering linkage.

More models to match more jobs! With addition of the brand-new 158 Series, Brockway now offers a complete line of intermediate-size Huskies . . . ideal all-purpose trucks that maneuver easily in short-haul service, yet have the power range for fast, profitable, over-the-road transport, too.

These compact Huskies are low in operating cost and long on service, with many money-saving, mile-making features. They include exclusive Uni-Matched design which means that all components of Brockway trucks – power train, chassis, cab and hundreds of functioning parts – are fully coordinated in one smoothly operating unit.

This means job-matched performance and maximum economy and efficiency. Solid reasons for seeing your Brockway representative for complete details on the new line of medium-size Huskies.

BROCKWAY MOTOR TRUCKS, CORTLAND, N. Y.
Division of Mack Trucks, Inc.

TANDEM AXLE . . .
from 40,000 to 50,000 lbs. GVW.

CARGO . . .
from 23,000 to 36,000 lbs. GVW.

long haul or pension run

faster, safer, more dependable delivery with VORNADO TRUCK CAB AIR CONDITIONING

OTHER OUTSTANDING FEATURES:

- **The only refrigerant pre-charged system on the market today. (accurately pre-charged in the factory)**
- **No refrigerant specialist needed, any mechanic can easily install it. (attach quick connect refrigerant lines, and use)**
- **Self-contained power unit eliminates drain on the truck engine.**
- **Nation wide sales and service centers.**
- **Low cost leasing programs also available.**

Write for complete information

MAIL TODAY

AUTOMATIC RADIO MFG. CO., INC.
122 Brookline Ave.
Boston 15, Massachusetts

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Vornado Truck Cab Air Conditioning combats heat exhaustion, blurred vision and abdominal cramps . . . increases depth perception, keeps truck operators alert and mentally aware. They drive more safely, arrive at their destination feeling fresher, comfortably cool, and less fatigued.

Dependable delivery means customer satisfaction and results in greater profits for you. Install Vornado Truck Cab Air Conditioning in all your trucks — a quality product by Automatic Radio Mfg. Co., Inc.

AUTOMATIC RADIO

VORNADO TRUCK CAB AIR CONDITIONER DIVISION

WHITE 9000 SERIES

MORE
PAYLOAD PROFITS

MORE in high cube hauling
PAYLOAD PROFITS

White 9064TD with Custom Cab

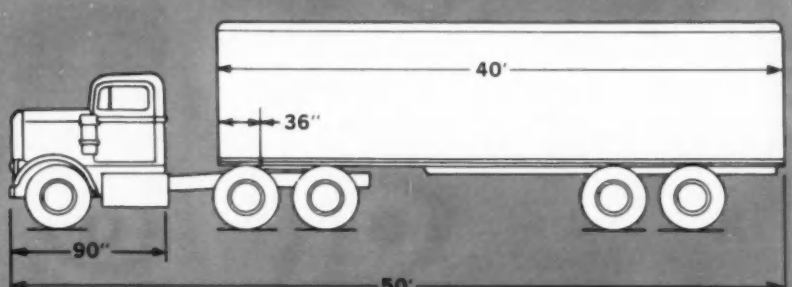
Short 90″ bumper-to-back-of-cab dimension and lightweight chassis make this big, rugged WHITE 9064TD ideal for high-cube payloads.

Designed to haul a 40-ft. semi-trailer in 50-ft. states . . . 64 cu. ft. more payload than a conventional 102″ tractor. And every *extra* cubic foot of cargo space adds *extra* payload profits!

Powerful WHITE-CUMMINS diesel engines, from 180 to 250 H.P., move your big loads fast and easy . . . up and over steepest grades . . . through suburban traffic . . . over the highway. Options include WHITE-CUMMINS Economy Diesel engines which provide big-displacement power, dependability and long life *combined* with *maximum* fuel economy. Add to payload profits with top performance at lower total operating costs.

Optional Custom Cab provides unsurpassed comfort.

All 9000 models have a 90″ bumper-to-back-of-cab dimension and will haul a 40′ square-nose semi-trailer in 50′ states.



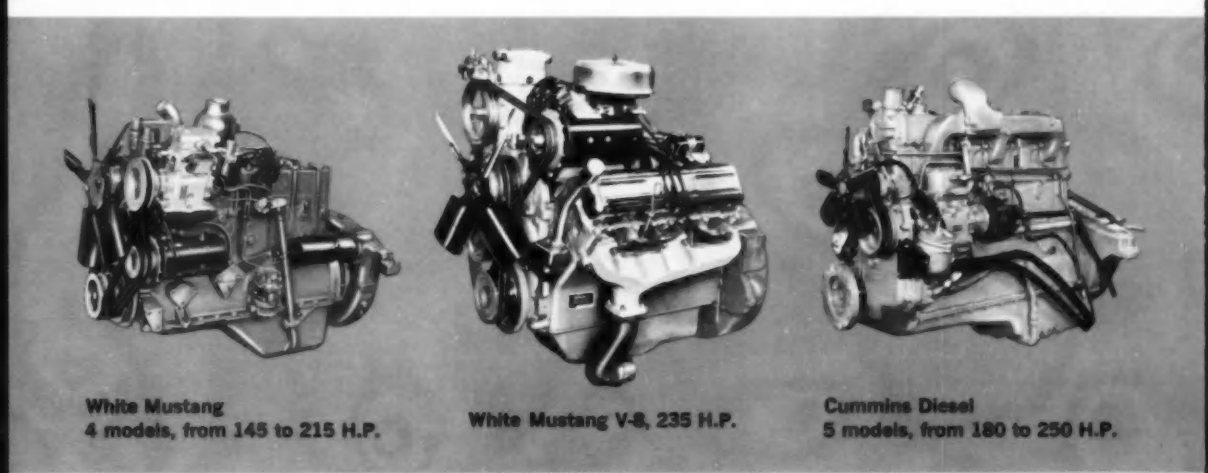
PICK YOUR CAB **Custom or Standard**

The finest cab in the industry, inside and out! Provides unequaled driver comfort, greater safety, longer cab life. Rugged, reinforced sub-frame, all-steel construction. Better visibility—front, side and back. Instruments and controls grouped and positioned for easy reading, easy reaching. Western-type, contoured driver's seat. And many more extras!

Available as optional equipment at extra cost.

Roomy Standard Cab on the WHITE 9000 features outstanding driver comfort and riding ease. Fully adjustable, contoured driver seat. Carefully positioned pedals, with twin accelerator and brake pedals located conveniently side by side. Instruments on "Sweep View" panel have fluorescent markings and improved lighting. All-directional and wide-angle vision provides unobstructed driver view for greater operational safety.

PICK YOUR POWER **Gasoline or Diesel**



White Mustang
4 models, from 145 to 215 H.P.

White Mustang V-8, 235 H.P.

Cummins Diesel
5 models, from 180 to 250 H.P.

Whatever your job, WHITE has the engine exactly right for it. WHITE Mustangs are time-proven, job-proven for rugged dependability. WHITE Super Mustang V-8 with overhead valves and full wet-sleeve construction gets more miles per gallon, requires less maintenance over the years than any competitive engine.

And WHITE-CUMMINS Economy Diesels are specially engineered to give your WHITE top performance at lowest operating costs . . . can save you $400 and more per year in fuel costs alone over other comparable diesels. Available either as standard or optional equipment on the WHITE 9000 Series.

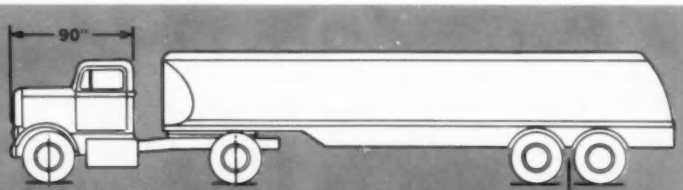
MORE in bulk hauling
PAYLOAD PROFITS

White 9000TV with Standard Cab

Designed specifically to move bigger payloads at extra profit, the powerful, lightweight WHITE 9000TV combines ideal weight distribution, lightweight chassis and a high performance gasoline V-8 engine with maximum fuel economy.

The WHITE Super Mustang V-8 gasoline engine packs 235 H.P., handles heaviest loads at high road speeds, squeezes more miles from every gallon of fuel—10% more than competitive engines. And its full wet-sleeve construction, modern short-stroke design and high-velocity cooling assure low maintenance and long life. Diesel-powered models available with standard chassis . . . or with ultra-lightweight chassis which uses aluminum and fiberglass wherever it makes engineering sense to take as much as 1100 lbs. off chassis weight and add them to payload.

9000TV with standard specifications including 10.00 x 20 tires, 82 gals. of fuel and 350-lb. fifth wheel weighs only 9500 lbs. 62" dimension from front axle to back of cab permits additional payload to be carried on front axle.



CHASSIS	5,500	4,000	
KING PIN LOAD	4,500	14,000	
TOTAL	10,000	18,000	32,000

TRACTOR CHASSIS	9,500
PAYLOAD AND TRAILER	50,500
GCW	60,000

MORE PAYLOAD PROFITS in construction hauling

White 9064

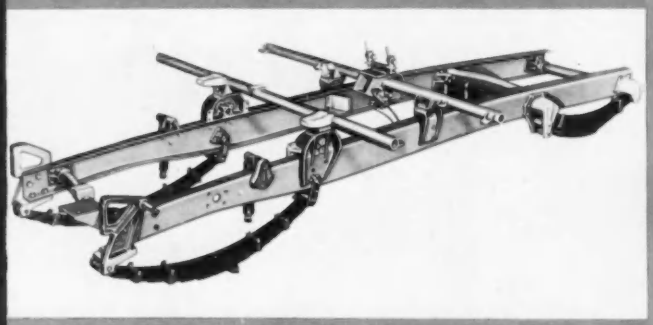
Most popular tandem in the construction industry! This extra-tough Mustang-powered WHITE 9064 has a short 90″ BBC dimension, heavy front-axle loading, ideal weight distribution. *Plus* the most rugged chassis construction on the market. And proven Mustang gasoline power, with top on-the-job stamina and fuel economy.

The 9064 is built to stand up under all the punishment construction work can hand it—year after year! And does it with less maintenance and greater all-around economy. As a mixer, it packs a full yard more load—packs it over the toughest kind of terrain with ease. With dump body, handles bigger payloads—gives you a bigger payoff.

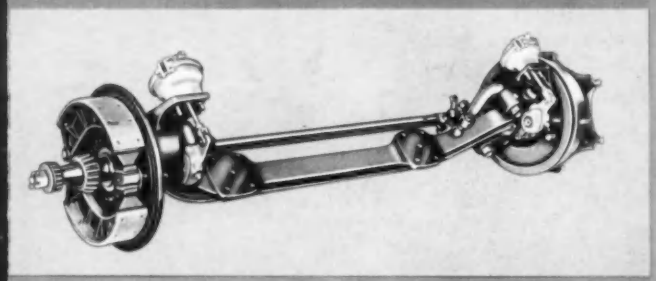
Short BBC and ideal weight distribution give the WHITE 9064 top maneuverability with maximum loads. Handles close-quarter situations and rugged terrain easily. High front-axle loading makes possible bigger payloads.

MORE PAYLOAD PROFITS

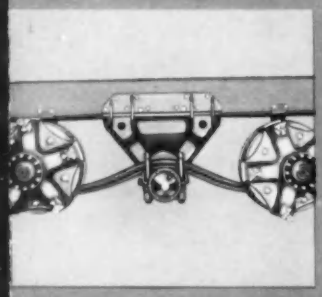
with all of these WHITE 9000 Engineering Advantages



New 9000 Frame. Frame rails of heat-treated alloy steel on standard tractor models provide longer life than carbon-steel frame. Light and strong, eliminating necessity of reinforcement or double-channel rails. Available in single-rail assembly or with liner within main rail for extra-heavy-duty requirements.

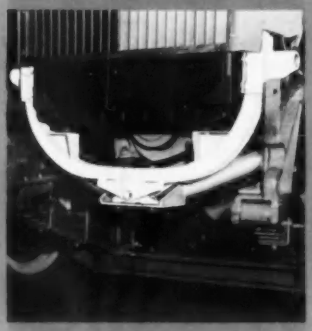


Wider, stronger front axles provide greater maneuverability and payload capacity. Handles more lbs. with surer steering.



New lightweight, two-leaf tandem suspension, optional on all tandem models, gives excellent riding qualities.

One-man, five-minute fender removal for easy maintenance. Cuts labor costs. Helps reduce downtime.



Pivot Point Suspension. Radiator, fenders and adjoining sheet-metal assemblies are mounted in a husky "horse collar" structure and hinge-anchored to rubber-cushioned center support on front cross member of frame. This center pivot keeps radiator, fenders and adjoining assemblies stable, unaffected by frame twist or road shock.

The White-built, highway-proven 124C and 134C rear axles have an 18¼" ring gear with exceptionally wide teeth that provide greater strength, longer life.

Bolted Construction. Heat-treated bolts, custom-fitted to reamed holes, permit use of higher strength material than is possible with rivets. Spring-steel washers keep assembly permanently tight. Improves chassis strength. Facilitates maintenance. Assures long life.

Multi-functional frame brackets of high-strength, lighter weight steel serve as front bumper and front spring support, steering-arm anchor and towing eye. Reduce weight, yet provide rugged service.

Form No. AD-1289

Litho in U.S.A.

ASK YOUR NEAREST WHITE BRANCH OR DISTRIBUTOR FOR A DEMONSTRATION.

WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE TRUCKS

THE WHITE MOTOR COMPANY, CLEVELAND 1, OHIO

Branches, distributors and dealers in all principal cities

WHEN MOTOR OIL FLOWS THROUGH THIS NEW FRAM "WEAR-GUARD" OIL FILTER

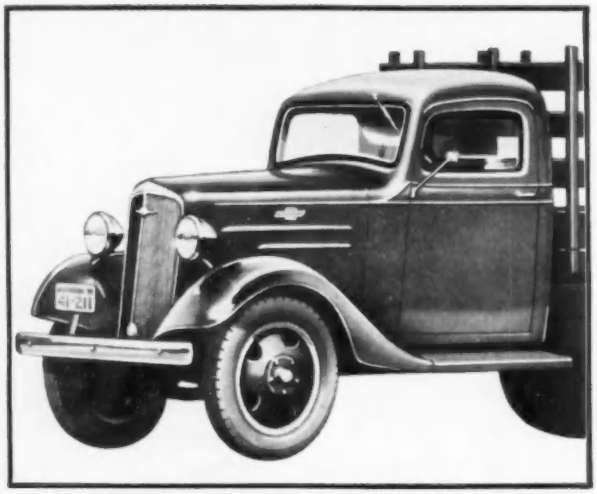
UP TO 40% MORE ENGINE-KILLING SLUDGE IS TRAPPED!

Tests using radioactive tracer techniques proved it! An exclusive scientific breakthrough in the construction of new Fram "Wear-Guard" Oil Filters traps up to 40% more sludge than any other filter tested. Why not let Fram's exclusive Fleet Survey System give your vehicles this new protection with a minimum of inventory. For details, phone or write: Fram Corporation, Providence 16, R.I.

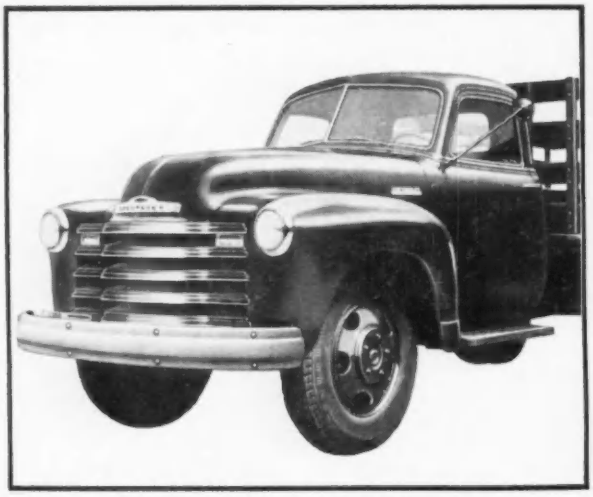
FRAM

"WEAR-GUARD" FILTERS

Look what's happened to WINDSHIELDS IN TRUCKS



1936 THE FLAT WINDSHIELD, 828 sq. inches of vision



1947 THE DIVIDED WINDSHIELD, 1,140 sq. inches of vision

1961 THE PANORAMIC WINDSHIELD, 1,620 sq. inches of vision

The pictures tell part — and *only* part—of the story. Behind this advance from a small flat piece of safety glass to the sweeping Panoramic Windshield of today is the research and engineering of one company in particular.

For more than twenty-five years Libbey·Owens·Ford has been helping manufacturers make their trucks safer, and more attractive, through the use of larger panoramic windshields that give drivers maximum vision. No wonder that at least half the trucks on the road today are equipped with L·O·F Safety Glass.

Where will the next great advancement in automotive glass come from? Look at the record below and judge for yourself.

1. L·O·F was one of the pioneers in the manufacture of safety glass for trucks and automobiles.

2. L·O·F actively participated in, and contributed to, development of Hi-Test, the superior polyvinyl butyral plastic bond for laminated safety glass.

3. L·O·F pioneered volume production of one-piece and two-piece curved windshields, and the compound curve for backlights to fit streamlined design.

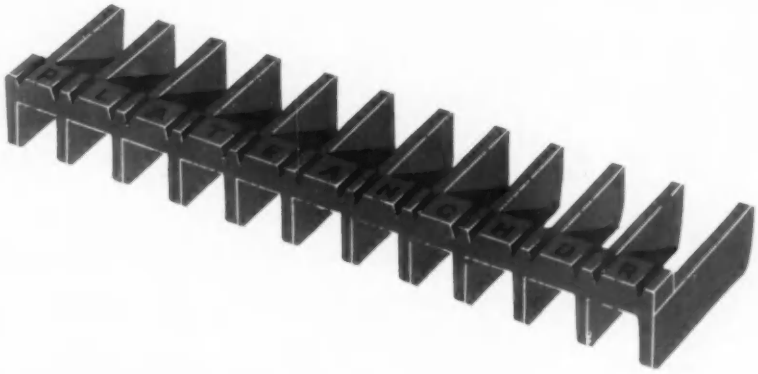
4. L·O·F pioneered E-Z-Eye, the blue-green safety plate glass and the shaded windshield.

5. L·O·F developed the great new Panoramic Windshield, the style setter for the future.

SAFETY L·O·F GLASS

LIBBEY·OWENS·FORD GLASS CO., Toledo 1, Ohio

don't ask the sea captain about this anchor!



Not exactly the sea-going variety, the anchor pictured immediately above is for holding down costs instead of ships. It's the *Willard Plate Anchor* that helps Willard batteries weather the most severe service conditions faced by the nation's automotive fleets.

Proved in actual service over millions of miles, this comb-shaped device fits on top of the battery plates. It locks them in position to give solidity without rigidity, prevents separator chafing and resulting shorts, eliminates the damaging effects of vibration. Fleet operators tell us it has doubled and tripled usual battery life.

Now comes another big plus in *Willard Tractor-Commercial Batteries*. A truly amazing discovery of our laboratories, *Formula 57* provides a new and different manufacturing process which produces negative plates that remain chemically active even through idle hours and undercharge conditions. *Formula 57* combats sulfation which is so deadly to battery efficiency, gives Willard batteries still longer life.

Yes, Willard has overcome the two greatest causes of battery failure—damage due to vibration, damage due to sulfation. And, with the Willard Direct Billing Plan, you get local availability, factory billing, guaranteed prices and operating cost—just a few more reasons why it pays to standardize on Willard batteries! *Willard Storage Battery Division, The Electric Storage Battery Company, Cleveland, Ohio.*

ESB

Willard

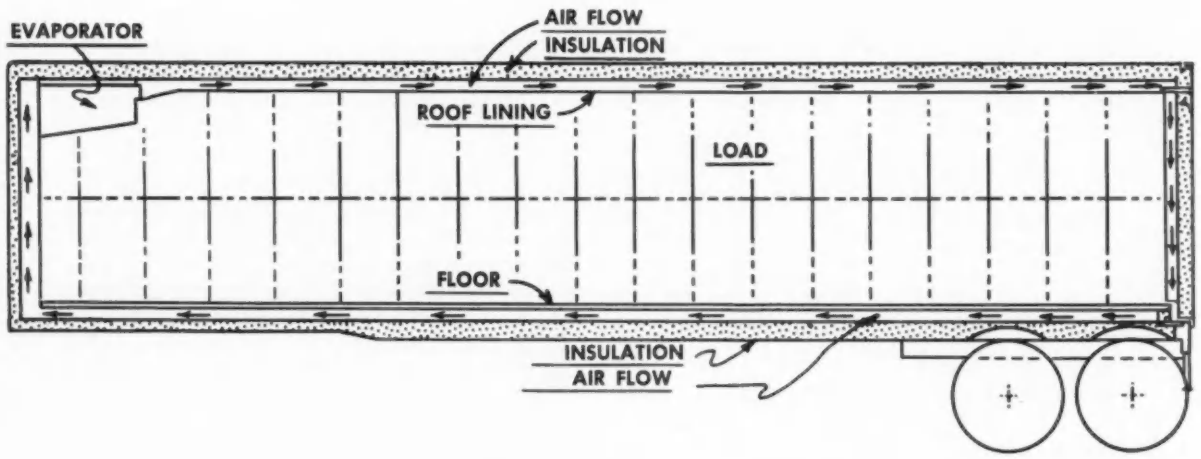
THE ONLY BATTERY WITH PLATE ANCHOR AND FORMULA 57

NEW FROM UTILITY TODAY . . .

The perimeter-cooled van takes its place beside such Utility design innovations as the 10" brake; the shockless air hitch; the rubber spring gear!

STANDARD FOR THE INDUSTRY TOMORROW!

Over-the-road performance plus official comparison tests tab this new concept of refrigerated transport as the standard of tomorrow . . .

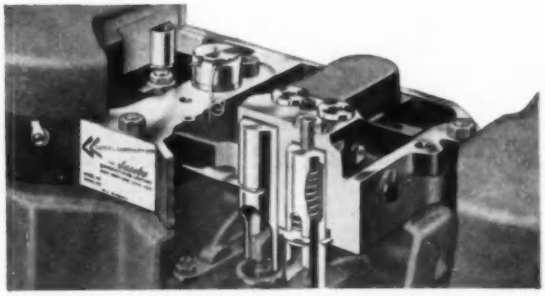


Your Utility Distributor has all the facts.

UTILITY TRAILER

Ask him to show you how the perimeter-cooled van fits in your reefer fleet plans.

NOW . . . faster trips . . . bigger payloads . . . greater savings *with complete braking safety!*



The Jacobs Engine Brake can be installed with vehicle down time of 4 hours or less.

NEW JACOBS DIESEL ENGINE BRAKE

. . . one of the great over-the-road economy advancements

The Jacobs Engine Brake gives any diesel transport complete and separate braking *independent of existing brakes.* It converts the engine into an air pump which makes use of every ounce of braking power that a diesel engine can produce, with no heat dissipation problems. In short, the Jacobs Engine Brake converts the diesel into a 100% workhorse that can pull its load uphill *and hold it back going downhill!*

Your driver can easily employ the Jacobs Engine Brake without changing his driving habits. Simple controls are located right in the vehicle cab. Best of all, the brake can be installed on standard diesels, 2-cycle engines, and supercharged or turbo-charged engines. At trade-in time, you can shift the brake easily from one truck to another. Or you can put it on leased vehicles.

SAFETY PLUS SAVINGS!

- Increased brake lining and drum life—well over *double the life* in many cases.
- Longer tire life.
- Less fuel consumption—increased oil life.
- Less engine maintenance.
- Easier engine run-in.
- HIGHER DOWNHILL SPEED WITH COMPLETE SAFETY—FASTER SCHEDULES—EXTRA HOURS OF OPERATING TIME!

Write for new catalog. See why the easy-to-install Jacobs Engine Brake is already drawing the attention of fleet operators and vehicle manufacturers throughout the industry.

CLESSIE L. CUMMINS DIVISION
diesel products
THE Jacobs MANUFACTURING COMPANY
WEST HARTFORD 10, CONNECTICUT

SOARING in POPULARITY

BALDWIN FILTERS

World's Finest

--with the Heart to CHALLENGE ALL OTHERS!

It takes real heart to be a winner—and BALDWIN has the heart. Pull one apart and see for yourself . . . compare the BALDWIN line with any others at any price. BALDWIN filters are best . . . highest quality materials, best performance.

Automatic wound cotton, Microlite pleated plastic impregnated paper, Vac-Cel diesel media.

GUARANTEED TO KEEP OIL VISIBLY AND CHEMICALLY CLEAN!

OIL • FUEL • AIR

For every application—cars, trucks, buses, tractors, industrial and marine engines.

Road test proved . . . endorsed and approved by prominent fleets throughout North America, including Greyhound and more than 75 major transit companies, plus hundreds of leading motor carriers and national contractors.

Join these hundreds of fleets who profit from the outstanding performance of BALDWIN FILTERS.

Every filter element is fully guaranteed to exceed original equipment specifications *BY FAR*.

BALDWIN FILTERS keep oil REALLY CLEAN.

Write, wire or phone for catalog and name of distributor in your area.

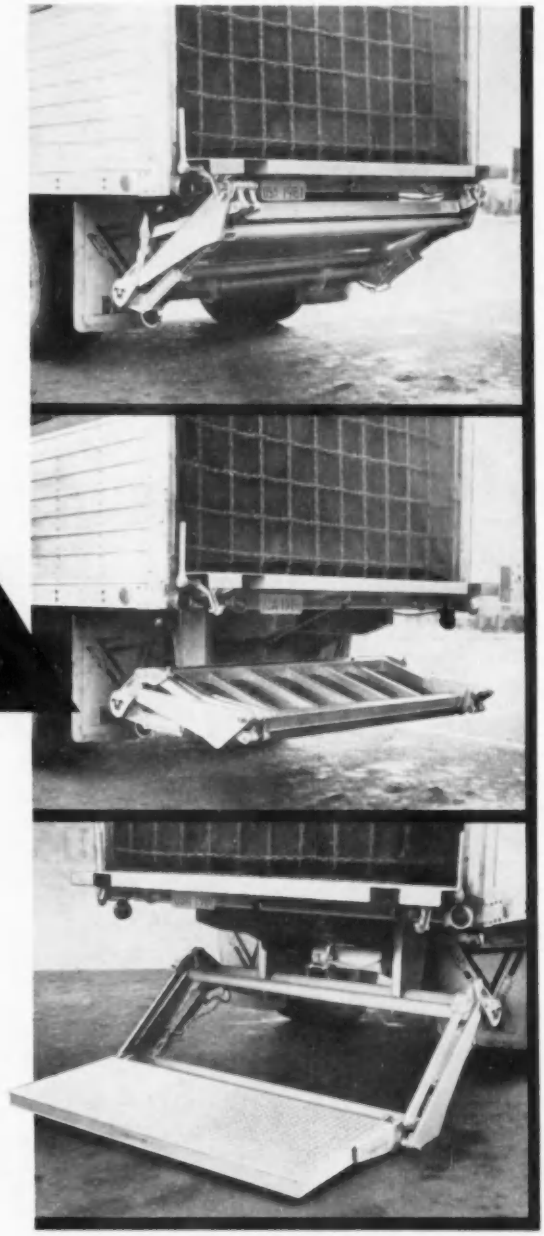
CHARTER MEMBER ASTA

J. A. BALDWIN Manufacturing Co. Kearney, Nebraska

Producers of the World's Finest Filters Since 1936

10 REASONS WHY YOUR BEST BUY IN A POWERED GATE IS THE WATSON

HIDE-A-LIFT



1. **LESS DEADWEIGHT**... (Only 725 lbs. net)... Up to 450 lbs. lighter than gates of comparable capacity, plus extra ruggedness and rigidity.
2. **ALL-ALUMINUM PLATFORM**... Safety plate sturdily reinforced with special extruded aluminum ribs and forged lugs.
3. **BALANCED DUAL CYLINDER DESIGN**... Reduces stresses in lifting mechanisms.
4. **CYLINDERS PUSH, NOT PULL**... Greater overall efficiency.
5. **SIMPLE ONE-HAND LEVER**... Controls all gate operations. Platform automatically unfolds to vertical position – no need to reach under truck bed.
6. **POWER DOWN WHEN NEEDED**... Both electric and PTO... speeds platform unfolding and provides controlled lowering. No waiting in cold weather.
7. **POSITIVE DUAL LATCHING**... In either folded or loaded position – no chains.
8. **PLATFORM AREA IS FULLY USABLE**... Entire 72" x 28" area (big enough for 3 drums) is "in the clear" for loading.
9. **SAVES MONEY**... HIDE-A-LIFT leaves van clear for light pick-up and delivery without operating "gate"– you use it only when needed to lift or lower. Saves time, fuel, engine wear and battery drain as compared to old-style gates, yet costs no more installed.
10. **LONGER LIFE**... Platform stays protected under truck bed when not in use; lift trucks never run over platform in dock loading. The result is years of extra service.

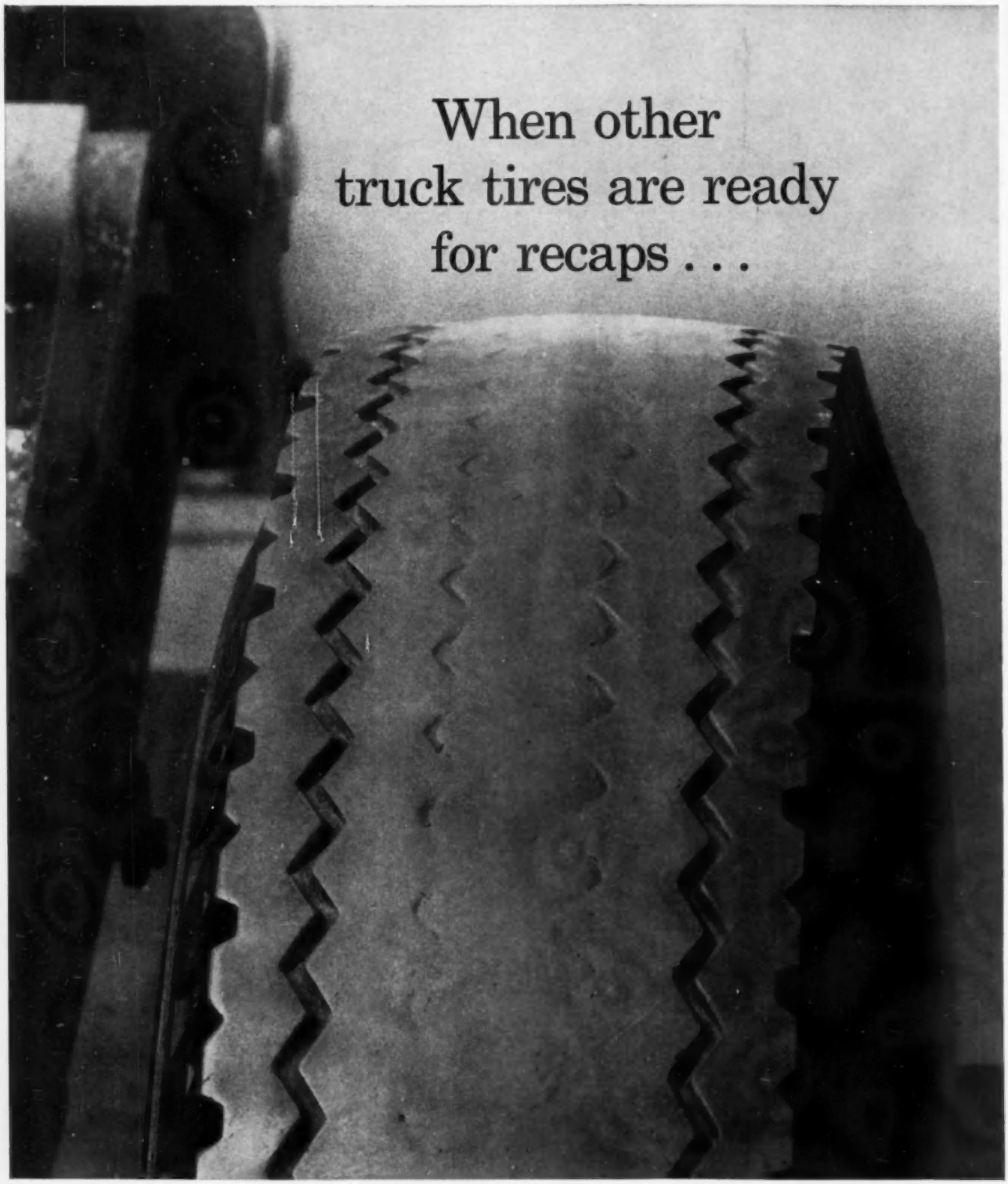
The WATSON HIDE-A-LIFT does everything a conventional 2000-lb. powered gate can do, and does it better. And, at no additional cost, it gives you the practical, profitable advantages of a platform that stays out of the way when you don't need it. Why settle for less? Write us *now* for literature, prices, and name of your local WATSON distributor.

WATSON

H. S. WATSON COMPANY

1316-67th St.
EMERYVILLE 8, CALIFORNIA

1606 Laskey Rd. • TOLEDO 12, OHIO



BIG CLAIM? Big reason! Because over 109,000,000 test miles (logged by more than 200 independent fleets all over the country) prove you really can get an extra tire mile for every two you now haul! Why? Because the Transport-100's new broad center rib minimizes squirming and scuff wear. A flatter crown gives

this Firestone TRANSPORT-100 is still ready to roll

Both tires unretouched—ran identical mileage. Records provided on request.

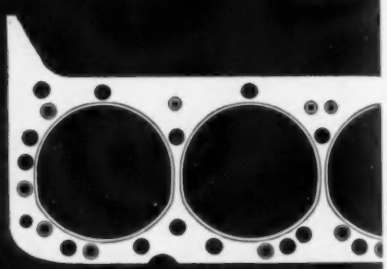
the Transport-100 a better grip and cuts down on uneven wear. You can get the extra 50% mileage in the Transport-100 at no *extra cost.* Available in nylon or Tyrex® rayon cord, tubed or tubeless at your nearby Firestone Dealer or Store.

Specify Firestone Tires on New Trucks and Trailers MEMBER ATA AMERICAN TRUCKING INDUSTRY

Copyright 1961, The Firestone Tire & Rubber Company ®T.M. of Tyrex, Inc. Transport® T.M. Firestone

FITZGERALD GASKETS have the answer

First with the best replacement gasket
Fitzgerald Fused-Aluminum Steel and Asbestos Gasket with "built-in" SEALABILITY.



FITZGERALD Gaskets SINCE 1906

WITH THE ADDED EXTRA *Craftsmanship*

The Fitzgerald Manufacturing Co.

Torrington, Connecticut

Branches and Warehouses: Los Angeles, Calif.—Chicago, Ill.
Canadian FITZGERALD Ltd., Toronto, Canada

Get this valuable manual FREE!

Tells you how to refinish your fleet faster... better... easier... and at lower cost with DITZLER'S *DITZCO*® System

Explains how to save money 5 important ways:

1. **Less idle time**
2. **Lower material cost**
3. **Reduced labor costs**
4. **Lower shop overhead**
5. **Fewer "repeats"**

- **With this free, detailed manual** to supplement the skill and experience of your painting staff, you'll definitely be able to keep your fleet looking new longer.
- **The practical, step-by-step procedures** of DITZLER'S DITZCO System explained in this book will also save you money. They spell out, simply and clearly, how you can cut costs at every step—in surface preparation, priming, undercoating and enamel finishing.
- **Try this practical way** next time you paint a single unit or your entire fleet. You'll be pleasantly surprised how much faster and easier the work is done—how much longer the finished job holds its luster.

Mail coupon today for this "Full of Facts" book on truck painting— IT'S FREE!

Ditzler Color Division, Pittsburgh Plate Glass Company
Detroit 4, Mich. • Torrance, Calif.

DITZLER®

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

DITZLER COLOR DIVISION,
Dept. CC-91, 8000 West Chicago Ave., Detroit 4, Mich.

Please send me free copy of "5 Ways" book.

Name_____ Title_____

Firm Name_____

Address_____

City_____ Zone____ State_____

This Monogram
DESIGNATES THE
Commercial Car
MANUFACTURED BY THE
CHICAGO PNEUMATIC TOOL CO.
to meet the demand for a light delivery wagon which shall be Substantial, Reliable, Economical and Simple in Action.
20 H. P.
Load Capacity 1500 Pounds
Carrying Space 78 x 44
Express Body
Flare Board
Canvas or Full Panel Top
It embodies every demonstrated improvement and has several entirely new features making it the Strongest, Most Efficient, Dependable and Fastest Delivery Car ever introduced.
We want Dealers and Users to know about its merits and new features in construction by reading our Descriptive Circular which will be mailed upon application.
CHICAGO PNEUMATIC TOOL COMPANY
Automobile Department, 1337 Michigan Avenue, CHICAGO, ILL.

1911

CP HAD ESTABLISHED ITS REPUTATION

as one of the "name-brand" builders of commercial vehicles... The Little Giant Truck and the CPT Commercial Car.

1961

CHICAGO PNEUMATIC AUTOMOTIVE TOOLS

cut time in the shop . . . increase time on the road

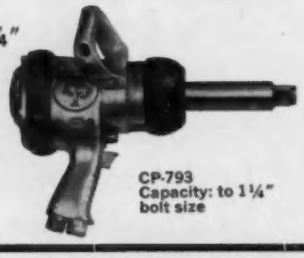
Back of CP's complete line of air-powered tools are 50 years of service to the Automotive Industry. CP equipment has earned its reputation for "keeping the big fleets rolling."

AIR-WRENCHES

8 models in bolt size capacities from ⅜" to 1¼"

CP-750
Capacity: to ⅝"
bolt size

CP-770
Capactiy: to 1"
bolt size



CP-793
Capacity: to 1¼"
bolt size

ELECTRIC IMPACT WRENCHES

2 Models —
to ⅝"
bolt size

CP-724 and CP-725

CP-715 BREAKER

2,000
blows per minute

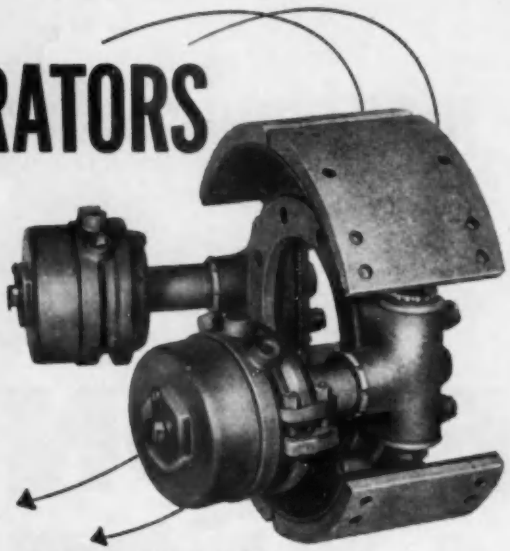
PNEU-DRAULIC JACKS
(Air-operated hydraulic)

CP-705-20TC
Capacity: 20 Tons

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

AIR AND ELECTRIC TOOLS • IMPACT WRENCHES • AIR-DRILLS • BREAKERS • PNEU-DRAULIC JACKS AND PUMPS • ZIP-GUNS

NOW! MAJOR FLEET OPERATORS SPECIFY THE NEW



STOPMASTER BRAKE *because*

IT OFFERS UNEXCELLED PERFORMANCE PLUS LONGER LIFE!

To obtain better performance and longer brake life, more and more leading fleet owners and operators are specifying Rockwell-Standard Stopmaster brakes on new vehicles. Rockwell-Standard's years of intensive testing, under all conceivable operating conditions, have proven the superior control and extended operating life of the STOPMASTER brake.

Based on average results of numerous OEM highway vehicle tests, the Stopmaster brake offers these remarkable advantages:

35% lighter weight
38% less heat fade
57% less air volume required
56% longer lining life
56% longer drum life
66% less adjustment required
37% fewer service parts

Important Stopmaster features!

"Fail-Safe" Units* prevent runaway vehicles due to loss of air . . . provide positive mechanical operation with either automatic or manual control . . . eliminate need for prop-shaft brake . . . are easily released without air pressure.

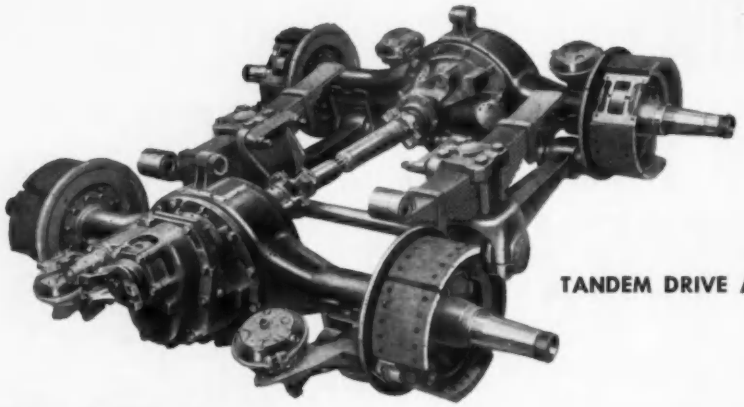
Automatic Brake Adjustment* eliminates manual adjustment!

Frequent lubrication not required! Actuation units completely sealed.

*Optional

Another Product of... **ROCKWELL-STANDARD CORPORATION**

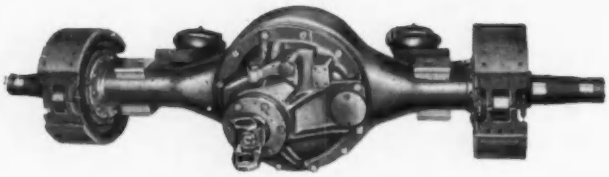
Brake Division, Ashtabula, Ohio



TANDEM DRIVE AXLES

"EATON AXLES"

The famous name that guarantees dependable performance and low hauling costs



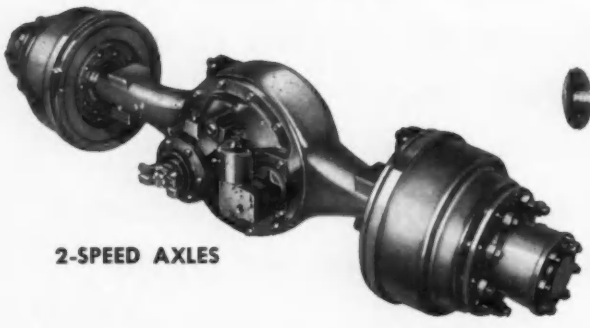
DOUBLE-REDUCTION AXLES

Through half a century, truck operators have learned that they can depend on Eaton Axles to deliver the kind of performance that keeps trucks on the road, cuts operating and maintenance costs, and adds to profit.

Eaton consistently leads the industry—particularly in the field of 2-Speed, Double-Reduction, and Tandem Drive units—with exclusive advancements which enable trucks to haul more legal payload, and add thousands of low-cost miles to both axle and vehicle life. The rugged stamina and efficiency of these Eaton-designed axles have been proven in billions of miles of operation in every type of service.

There's an Eaton Rear Axle best suited for your hauling requirement. Ask your truck dealer to help you specify the right one.

EATON



2-SPEED AXLES

SINGLE-REDUCTION AXLES

EATON

AXLE DIVISION

MANUFACTURING COMPANY

CLEVELAND 10, OHIO

Deliver perishables as perfectly as you receive them

Liquid carbon dioxide supply line—a vital link between you and the perfect product you want your consignees to receive.
REFRIGERATED TRANSPORT

Liquid CO_2

Chill your trucks with a jet shot of Liquiflow* (liquid CO_2)—insure lading quality; reduce driver waiting time; lower maintenance costs on mechanical refrigeration units. *Here's how!*

One shot of liquid CO_2 lowers temperatures *immediately* . . . eliminates driver stand-by time and avoids mechanical running after each loading . . . also provides unlimited refrigeration for emergency use in the event of breakdown.

Pre-Cooling

One shot of CO_2 cools your truck body at once! The mechanical unit takes over without hours of pulldown time.

Reg. T.M.

Post-Cooling

Liquid CO_2 condenses moisture, cools trailer bodies and helps remove accumulated heat. Starts load in prime condition.

Emergency Cooling

Unloading, warehousing and reloading can be eliminated with Liquiflow. While repairs are made, load is protected by CO_2, added as needed. Try Liquid Carbonic dry ice, too—ideal for low-temperature storage and shipment of frozen foods.

Also available is our pocket-size dry ice calculator—for any body capacity, any insulation. Write today for your free dry ice calculator and folder that lists 137 Liquid Carbonic plants and warehouses in the United States and Canada—one is near you!

LIQUID CARBONIC
DIVISION OF **GENERAL DYNAMICS**
Dept. CCJ, 135 South LaSalle Street, Chicago 3, Illinois
In Canada: Liquid Carbonic Canadian Corporation, Limited, 8375 Mayrand Street, Montreal 9, Quebec

PERFECT CIRCLE PISTON RINGS ARE INSTALLED AS ORIGINAL FACTORY EQUIPMENT IN 95 BRANDS OF VEHICLES AND ENGINES, AND IN 1960, MORE AWARD-WINNING FLEETS USED PC RINGS EXCLUSIVELY THAN THE NEXT 5 BRANDS COMBINED.

For over 60 years, Perfect Circle has been a partner in the progress of the internal combustion engine—the key to today's highway transportation.

Actually, PC's first products were railway inspection cars. From this, PC turned to automotive engines, and eventually developed into the industry's leading piston ring specialist. Through a wealth of experience, Perfect Circle has gained an intimate and unequalled knowledge of piston rings.

This background, teamed with superior engineering, results in piston rings that are custom-designed to meet the needs of any particular application, from taxis to tractors. It's another reason why Perfect Circle rings are preferred for original equipment and replacement by so many fleets and manufacturers throughout the world.

Cash in on the best piston ring know-how in the business—always install Perfect Circle rings.

WHY THE "PROS" PREFER PERFECT CIRCLE PISTON RINGS:

PC IS FIRST IN EXPERIENCE

PERFECT CIRCLE

PISTON RINGS • POWER SERVICE PRODUCTS

Hagerstown, Indiana • Don Mills, Ontario, Canada

FOLIO FOR PROGRESS

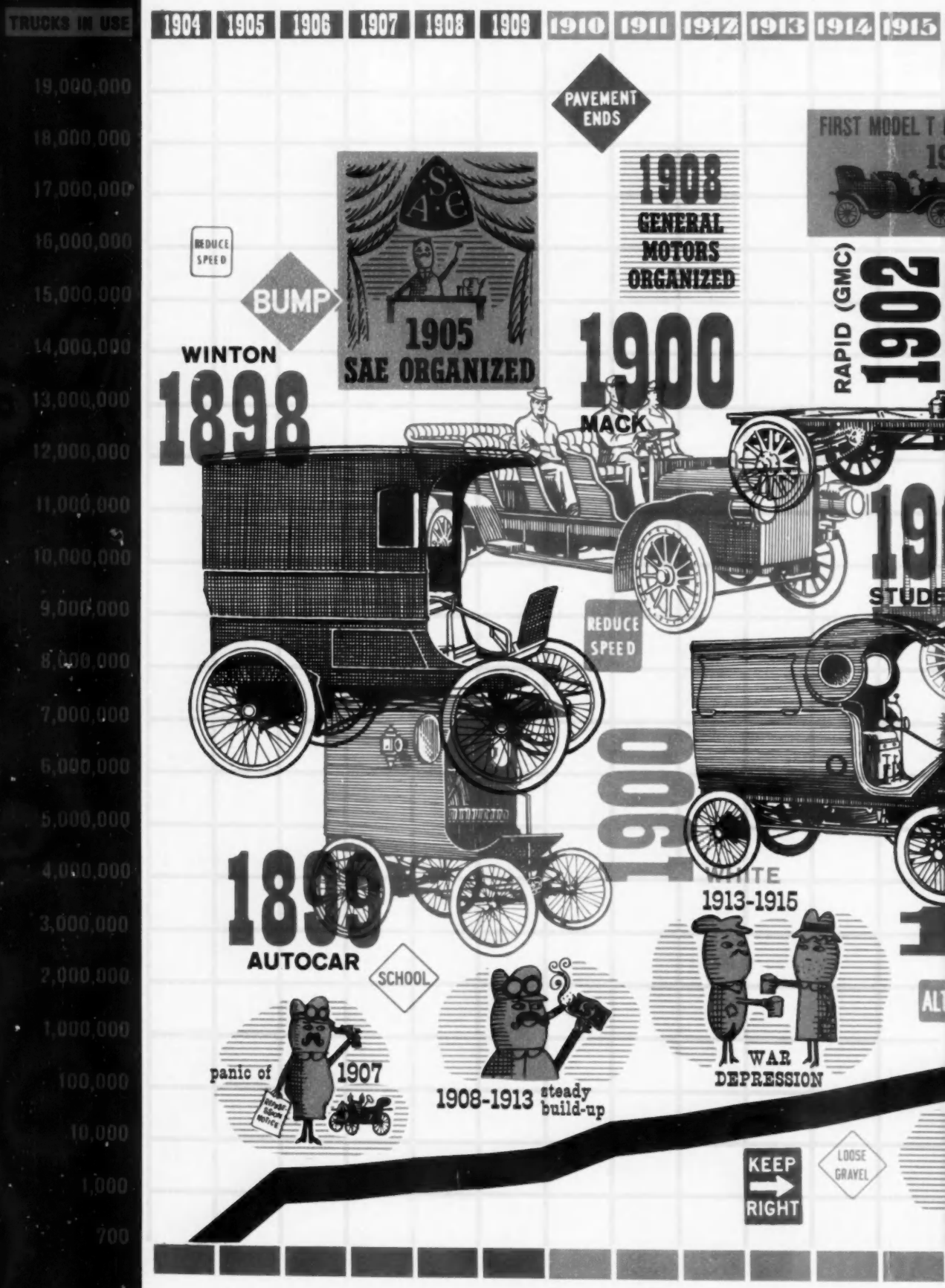
#1

The Growing World of Motorized Transport

COMMERCIAL CAR JOURNAL

A CHILTON PUBLICATION

56th and Chestnut Streets, Philadelphia 39, Pa.



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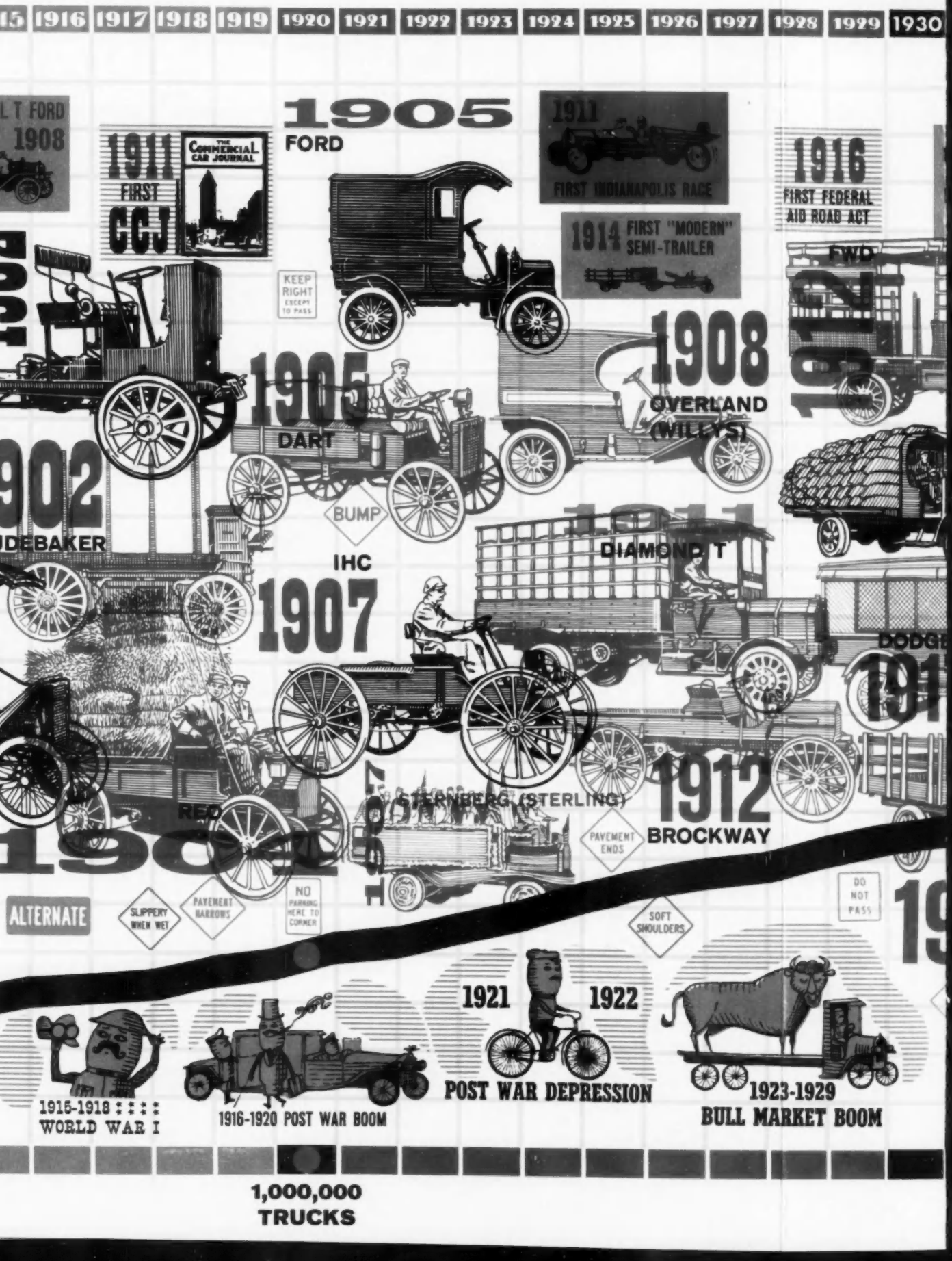
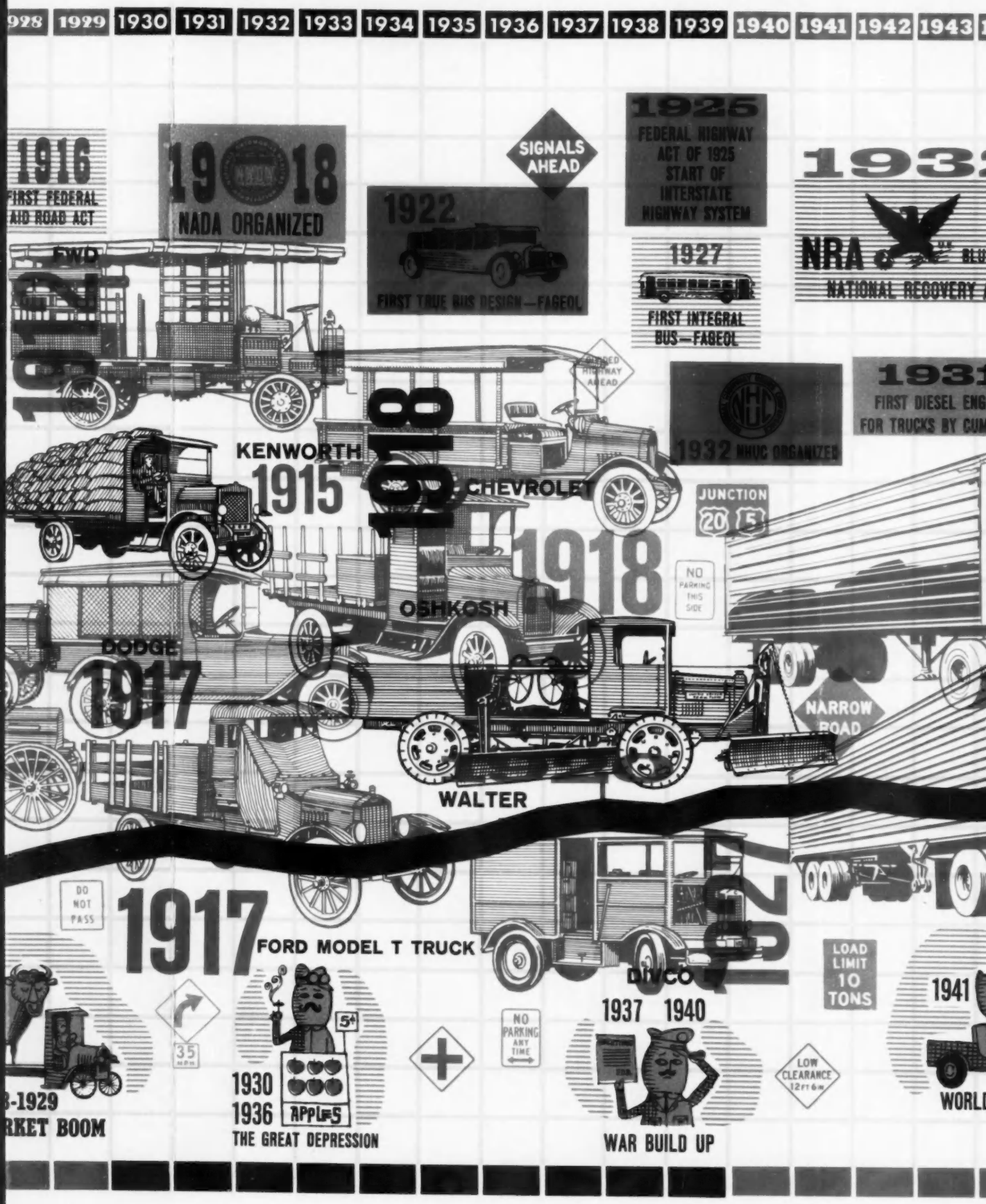

15 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930
L T FORD 1908
1911 FIRST CCJ
THE COMMERCIAL CAR JOURNAL
1905 FORD
1911 FIRST INDIANAPOLIS RACE
1914 FIRST "MODERN" SEMI-TRAILER
1916 FIRST FEDERAL AID ROAD ACT
FWD
KEEP RIGHT EXCEPT TO PASS
1908 OVERLAND (WILLYS)
1905 DART
902
UDEBAKER
BUMP
IHC
1907
DIAMOND T
DODGE
191
REO
1912
STERNBERG (STERLING)
PAVEMENT ENDS
BROCKWAY
ALTERNATE
SLIPPERY WHEN WET
PAVEMENT NARROWS
NO PARKING HERE TO CORNER
SOFT SHOULDERS
DO NOT PASS
1921
1922
1915-1918 : : : :
WORLD WAR I
1916-1920 POST WAR BOOM
POST WAR DEPRESSION
1923-1929
BULL MARKET BOOM
1,000,000
TRUCKS


1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943
1916
FIRST FEDERAL AID ROAD ACT
1918
NADA ORGANIZED
SIGNALS AHEAD
1922
FIRST TRUE BUS DESIGN—FAGEOL
1926
FEDERAL HIGHWAY ACT OF 1925 START OF INTERSTATE HIGHWAY SYSTEM
1927
FIRST INTEGRAL BUS—FAGEOL
1933
NRA
NATIONAL RECOVERY
1931
FIRST DIESEL ENG
FOR TRUCKS BY CUM
1932 NHUC ORGANIZED
FWD
1918
KENWORTH
1915
CHEVROLET
JUNCTION
20 5
NO PARKING THIS SIDE
1918
OSHKOSH
DODGE
1917
NARROW ROAD
WALTER
DO NOT PASS
1917
FORD MODEL T TRUCK
1927
DIVCO
1937 1940
LOAD LIMIT 10 TONS
1941
35
1930
1936
APPLES
THE GREAT DEPRESSION
NO PARKING ANY TIME
LOW CLEARANCE 12FT 6IN
WAR BUILD UP
WORLD

3 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959

LEGEND

TOTAL TRUCK REGISTRATIONS 1904-1980 WITH HIGHLIGHTS ALONG THE WAY

Truck registrations to date are from U.S. Bureau of Public Roads. Projection is by COMMERCIAL CAR JOURNAL using many combined sources.

1933 ATA **ORGANIZED**

NO RIGHT TURN

NO PARKING THIS SIDE

MOTOR CARRIER ACT OF **1935** FIRST FEDERAL TRUCK REGULATION

SPEED LIMIT 50

32

BLUE EAGLE

RY ACT

31 ENGINE CUMMINS

TYPICAL CURRENT TRACTOR-TRAILER (CONVENTIONAL)

DETOUR

1937 FIRST ICC VEHICLE SAFETY REGULATIONS

1937 FIRST TRUCK ROADEO

1938 FIRST TWO-WAY RADIOS

PASS WITH CARE

STOP AHEAD

NO PARKING ANY TIME

METRO "WALK-IN BODY"

1936 TO CURRENT

MEN WORKING

SPEED LIMIT 50

ONE WAY

TYPICAL CURRENT TRACTOR-TRAILER-COE

1945

P·I·E

WEST COAST DROMEDA

1950 TO CURRENT

1941 1945

WORLD WORLD II

1946-1949 STEADY BUILD UP

LOW CLEARANCE 12 FT 6 IN

1950 1953

KOREAN WAR

5,000,000 TRUCKS

10,000,000 TRUCKS

1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 196

LEGEND

TOTAL TRUCK REGISTRATIONS 1904-1980 WITH HIGHLIGHTS ALONG THE WAY

Truck registrations to date are from U.S. Bureau of Public Roads. Projection is by COMMERCIAL CAR JOURNAL using many combined sources.

1939 PRIVATE TRUCK COUNCIL ORGANIZED

1940 1ST MODE

1938 FIRST GM TWO-CYCLE DIESEL

1942 NATIONAL GAS RATIONING

ROAD CLOSED

PASS WITH CARE

37 C VEHICLE GULATIONS

1937 FIRST TRUCK ROADEO

1938 FIRST TWO-WAY RADIOS

HIGHLY SPECIALIZED BULK HAULER CURRENT

STOP AHEAD

1950

NO PARKING ANY TIME

HILL

METRO "WALK-IN BODY"

1936 TO CURRENT

NEW CO EDITORIA

MEN WORKING

ALTERNATE

SPEED LIMIT 50

P·I·E

1950 1953 KOREAN WAR

LOW EARANCE 2FT 6IN

WEST COAST "DROMEDARY"

KEEP RIGHT

1950 TO CURRENT

COMMERCIAL CAR JOURNAL 50 YEARS PROGRESS FROM EXPERIENCE

10,000,000 TRUCKS

1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980

40 PENNSYLVANIA TURNPIKE

MODERN TOLL ROAD

1948

LENOIR CHAIR CO. CASE "PRIMARY BUSINESS TEST" FOR PRIVATE FLEETS

1948

FIRST TUBELESS TIRES

1950

MARYLAND ROAD TEST

1956

HIGHWAY ACT OF 1956 START OF NEW INTERSTATE SYSTEM

PAVEMENT NARROWS

NO LEFT TURN

NO PARKING BUS STOP

NARROW BRIDGE

1942

TTMA ORGANIZED

19??

AIR SUPPORT VEHICLES

1970?

1980?

1980?

FIRST "FISHY BACK" OCEAN VAN LINES TO ALASKA

CCJ MOBILE RIAL OFFICE

19??

DO NOT ENTER

NARROW BRIDGE

REGULAR ROUTE BIRDY BACK

INTERNATIONAL HARVESTER TRUCK OF THE FUTURE

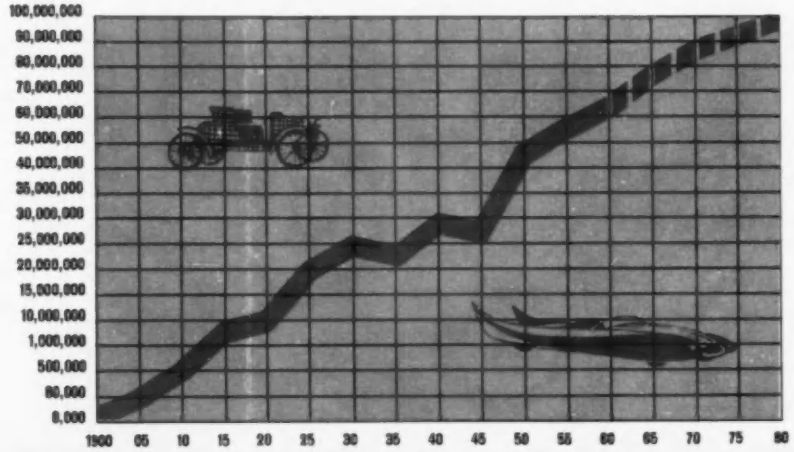
19??

FORD TRUCK OF THE FUTURE

SPACE TRUCKS ARRIVE ON MOON

TOTAL PASSENGER CAR REGISTRATIONS 1904 TO 1980

Passenger car registrations to date are from U.S. Bureau of Public Roads. Projection is by COMMERCIAL CAR JOURNAL using many combined sources.



15,000,000 TRUCKS

MILESTONES IN THE GROWING WORLD OF MOTORIZED TRANSPORT

1904

First year truck registrations separately counted; total: 7000.

Among famous makes in business: Winton since 1898, Autocar (1899), Mack and White (1900), Rapid (later GMC) and Studebaker (1902), Reo (1904).

Association of Licensed Automobile Manufacturers controls Selden patent on basic automobile.

Cudahy Packing, Anheuser-Busch, U. S. Express, the U. S. Post Office Dept., many others already established as sizeable "fleet" operations.

Two transcontinental runs made the year before . . . in 61 days.

Steering wheel had virtually replaced the tiller; most engines had been moved "out front."

Pneumatic tires on passenger cars and very light trucks; the big ones . . . up to ten tons capacity . . . all on solid tires.

In 1904, first FWD four-wheel-drive car; Weed tire chains; Prest-O-Lite gas headlights.

1905

SAE organized. Peter Heldt, a Chilton Editor, was one of its key founding fathers.

First Ford, Dart, Packard, Oldsmobile trucks.

AMA organized.

John Wanamaker stops selling cars and trucks but uses a great many in service fleet.

Truck production 750; total registrations 1400.

Fifth Avenue buses begin operation in New York City.

First vehicle license tags . . . in Pennsylvania.

Truck drivers in New York City get $20 a week; wagon drivers $14.

Cars and trucks available on installment plan.

Several makes have 4-cyl engines; Ford and Franklin offer straight-8's for racing cars.

First Dayton wheels.

1906

L. L. Whitman drives Franklin car from New York to San Francisco in 15 days.

Ductile Tungsten is developed by General Electric (later replaces platinum for ignition points).

Aluminum used extensively in Marmon cars.

Engineers discuss use of gas turbine as an automotive power unit. Principal drawback: Inability to find a suitable high temperature metal for turbine blades.

New England Tel & Tel Co. has 3-ton truck with power winch.

1907

ALAM develops horsepower rating adopted by many states for taxes . . . also sets standard for spark plug construction.

First IHC, Euclid and Sternberg (Sterling) trucks.

A truck-trailer train with electric truck and three trailers; payload 20 tons, speed 6 mph.

Fleetmen ask manufacturers for interchangeable engines to solve maintenance problem.

1908

General Motors organized.

First Model T Ford.

First Overland (Willys) truck.

First rural concrete highway aid in Michigan, north of Detroit.

First state driver's license law . . Rhode Island.

Among developments of the year: Marmon V-4 engine, self-sealing innertube, tread design on tires, electric dynamometer, sleeve-valve engine, silent timing chains, baked enamel finishes.

1909

In New York Truck Show, 91 per cent of engines are 4-cycle type; 64 per cent 4-cyl, 36 per cent 2-cyl. Most have chain drive. All above 1-ton have solid tires.

Department of Public Roads conducts test to show destruction of road surfaces by braking.

Selden Patent sustained by District Court.

Kelsey-Hayes Co. founded.

1910

First Federal truck; First White gasoline model; First American La-France fire engine.

Gimbel Brothers claims to be first completely motorized department store fleet, has 88 gasoline trucks.

Rapid (later GMC) offers factory maintenance contract. Trucks may be housed and maintained for fees from $20 to $35. "Breakdowns traceable to driver, extra at $1 per hour."

McQuay-Norris organized.

1911

Commercial Car Journal publishes first issue in March.

First Diamond T truck.

First Indianapolis race.

Selden Patent dies in U. S. Circuit Court of Appeals.

First highway center line painting, Wayne County, Mich.

First electric starter from "Boss" Ketering, later on Cadillac.

First electric lighting and horns; General Electric Mazda lamps.

New Companies: General Motors Truck (combining Rapid and Reliance), Chevrolet, U. S. Tire (absorbs four major builders), Eaton Mfg., Midland-Ross.

1912

National Association of Automobile Manufacturers (forerunner of AMA) adopts standards on truck guarantees; brass caution plate: "Overloading or overspeeding will void your warranty."

The U. S. Government sets standards for trucks in Government service.

First Brockway, FWD and Stewart trucks.

Armstrong Rubber and Budd Co. are organized.

1913

Nation dedicates 3400-mile Lincoln Highway—coast to coast, through 13 states.

Truck of the year: The Jeffery "Quad"—4-wheel drive, 4-wheel steering, 4-wheel brakes.

Ford, first of the mass producers, hits 1000 cars a day.

First Bendix drive.

Brewing industry is Nation's biggest user of trucks.

This year 170 makers produced 51,586 trucks.

1914

SAE sets up committees to study gas-electric vehicles, continuous torque transmissions and governors.

New companies: Fruehauf Trailer, Dodge Bros. (cars).

Mack introduces its AC "bulldog" models.

First traffic lights in Cleveland; first "stop" signs in Detroit.

Commercial Car Journal begins publishing truck specifications table.

Most truck manufacturers take a dim view of trailers, except at slow speeds and with no hills. But CCJ reports growing use.

Ford sets up the famous $5-a-day minimum wage.

Pull-More Truck Co. has front-wheel-drive model with detachable power unit. Later a tilt cab.

1915

At truck show, most models have 4-cyl engines; 86 per cent have 3-speed gear boxes. Pneumatic tires standard on trucks under 1500 lb, optional to 3000.

First Kenworth truck.

Investigations of possible truck use in European War.

C. H. Martin Co. has rocking fifth wheel—important key in semi-trailer development.

Packard introduces first 12-cyl engine—is also first with all-aluminum pistons.

General Tire organized.

1916

War in Europe creates material shortage, but truck production continues at high level.

U. S. Army uses trucks for supply train in Mexico.

Self-starters now standard on most trucks. Stop lights, mirrors, windshield wipers popular.

First Federal Aid Road Act.

SAE confers with War Department on standard military truck.

Goodyear demonstrates pneumatic tires in Akron-Boston run. The big changeover is near.

1917

U. S. declares war on Germany. War Department soon asks for bids on 70,000 trucks.

First interconnected traffic signals . . . in Salt Lake City.

First Model T Ford truck.

First Dodge Truck.

First Highway trailer.

1918

War production high; gasless Sundays; passenger car production slashed; truck production boosted (227,000 units).

First Chevrolet and Oshkosh trucks are produced.

Goodyear continues demonstration runs—Akron to Chicago in 35½ scheduled hours.

War hastens recognition of trucks as long haul carriers.

First highway route number sign . . . in Wisconsin.

Air brakes are introduced by Parker Air Appliance Co.

Enclosed cabs are now optional on most trucks.

National Automobile Dealers Association is organized.

United Motors and Chevrolet join General Motors.

War ends. Armistice is signed on November 11.

Napco Industries organized.

1919

Pneumatic tires offered on many heavy-duty truck models.

Army Truck Convoy makes first transcontinental trip.

SAE develops standards for "headlight glare."

First 3-color traffic light — installed in Detroit.

"Ship by Truck" bureaus sponsored by Firestone are now operating in 62 cities.

Oregon has first state gas tax.

1920

Railroad strike gives trucks a chance to prove ability in long and short haul service.

States get surplus war trucks for highway building.

Duesenberg is first U. S. car with straight-eight engine and four-wheel brakes.

First Alemite chassis lube.

Depression hits hard in last few months of this year.

1921

There are now 1500 "Motorized Express Companies," according to **Commercial Car Journal** estimate. Of these, nearly 1000 are engaged in some form of intercity transport.

U. S. Postal Service now has 3580 trucks in 262 cities.

Ford accounts for 55.45 per cent of industry's output.

There is much redesigning of engines and transmissions for increased speeds on improved highways. Most models have pneumatic tires as standard equipment.

A new record is set in highway building—12,000 miles of Federal Aid highways completed.

Dr. Thomas Midgely, Jr., proves effectiveness of tetraethyl lead in gasoline. Price of gasoline drops 7¢ in one year to 21.2¢ per gal, average.

Vickers, Inc., organized.

1922

Balloon tires and air cleaners make first appearance.

Several passenger cars have gas gage on instrument panel.

New York Central Railroad starts container car operation.

Changing scene: 29 electric railway companies are now operating motor buses.

Fageol builds first "true" intercity bus on low, wide chassis.

First Graham Bros. truck uses Dodge components.

National Safety Council sets up Motor Vehicle Section.

1923

Ethyl fluid is developed by GM Research Lab and offered by Standard Oil.

Store-door delivery is advocated by railroads, but most show little interest in idea.

First Chrysler car has high-speed engine, 4-wheel brakes.

Federal Aid highways now reach total of 26,536 miles.

First Duro lacquer.

First Yellow coach.

1924

National Transportation Conference in Washington adopts resolution . . . "There is need for truck transportation in cooperation with, not in competition against, railroads."

United Milk Co., San Francisco, cuts bulk hauling costs in half by using glass-lined truck tanks instead of shipping in 10-gal cans in rail cars.

Western Electric Co., New York City, has nation's largest fleet. Is now operating 12,032 trucks.

First model code set up for traffic laws and ordinances.

Cadillac introduces synchro-mesh transmission.

Yellow Coach and Truck is organized with General Motors Truck as subsidiary. (GM acquired control the next year.)

1925

Federal Highway Act of 1925 establishes first Interstate Highway System.

U. S. Supreme Court rules that states cannot refuse to license vehicles using Interstate highways within their borders.

American Express Co. replaces 168 horse-drawn delivery vehicles with 84 electric trucks.

National Automobile Parts Association is formed.

Standard 4-wheel brakes on GMC trucks—an industry first.

Standardized highway signs are adopted by the "Joint Board of Interstate Highways."

1926

SAE design standards and recommended practices, totalling over 500, are in handbook form.

ICC investigates competition between trucks and railroads.

E. G. "Cannon Ball" Baker drives 2-ton GMC truck with full load from New York to San Francisco in 5 days, 17½ hours.

Ford starts 5-day work week.

1927

Most truck models now offer complete equipment including bumpers, windshield wipers, air cleaners, and other items.

Model T dies on May 26.

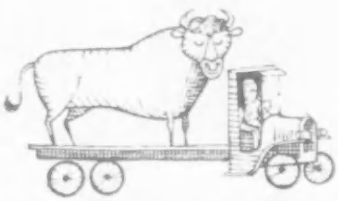
NACC estimates show private owners are operating 82 per cent of 2.7-million trucks in use.

First Divco truck—driven from front seat or either side.

Mack experiments with a high-speed diesel engine.

Fageol Bros. organize Twin-Coach Co. Produce first "integral" bus with underfloor engine.

1928



There are now 92,000 buses in operation—among them, 46,500 in common carrier use and 40,875 in school use.

First coast-to-coast bus service is introduced.

Ford's new Model A 1½-ton truck features 4-wheel brakes; worm-drive rear; 40-hp, 4-cyl, L-head engine.

There is now one truck for every 36 persons in U. S.

Borg-Warner is organized.

1929

White adds 6-cyl engine with seven main bearings . . . Chevrolet offers 6-cyl OHV engine.

Timken introduces tandem drive.

Utility Trailer offers third axle for trucks.

Allison joins General Motors.

Leece-Neville introduces the voltage regulator.

Stewart builds all-aluminum body—first by chassis maker.

Motor-Carrier, Inc., offers double-deck, six-auto transport with built-in hydraulic elevator.

Domestic new truck sales hit all-time high of 527,057.

Automotive radios are introduced, along with foot-operated headlight dimmer switch.

1930

Truck leasing by dealers takes increasingly prominent role.

New Sterling gasoline engine has 779.3-cu in. displacement, 185 hp—largest in truck field.

International Harvester uses "removable" cylinders — presumably the first production sleeves.

Timken has double-reduction drive which can be substituted for standard rear-axle units.

Studebaker introduces free-wheeling.

Austin Bantam, the first of the "compact" trucks, has 4-cyl, 45.6-cu. in. engine.

1931

Industry battles the big depression with sizeable array of new developments.

First Cummins diesel made available for truck use.

Relay Motors offers 6-wheeler with two 8-cyl Lycoming engines totalling 275 hp. It also has power shift, booster steering.

American-La France has 30-deg V-12 engine with 245 hp.

Zenith introduces new carburetor with vacuum-controlled accelerating pump.

Ford, typical of diversification, now offers 50 models.

Southern California Freight Lines delivers 21 tons of fruit from West Coast to New York in 117 hours running time.

Marmon-Herrington organized.

First Strick trailer.

Chicago, North Shore and Milwaukee Railroad offers piggyback service for trailers.

1932

NRA is formed.

Domestic truck sales hit bottom —only 180,413 new trucks.

Makers concentrate on heavy models as fleets are carrying fewer but heavier loads.

Ford comes out with a V-8.

Indiana is the first factory-equipped diesel truck (Cummins engine). White acquires Indiana in this same year.

White introduces a 12-cyl, 811-cu. in., "pancake" engine . . . Reo has an 8-cyl, 110-hp job.

Dodge offers 4-, 6- and 8-cyl models in its truck line.

American Association of State Highway Officials adopts first set of recommendations on vehicle size and weight limits.

National Highway Users Conference is organized this year . . . "to fight 1933 tax battles."

ICC asks Congress for "partial" truck regulation.

SAE pushes performance factor in truck ratings.

1933

American Trucking Associations forms from merger of Federated Truck Associations of America and American Highway Freight Association. Ted V. Rogers is ATA president. The first big job: An NRA code for wages and hours. Next: Long look at coming regs.

According to a survey, 200 breweries will spend over $42-million on automotive equipment "as beer flows again."

Radically-new White bus has 12-cyl, underfloor engine.

Sterling makes its new "Camel Back" featuring a tilt-cab.

General Motors introduces cars with Knee-Action and individual front-wheel suspension.

International Harvester offers ½-ton model built by Willys-Overland. Price—$360.

Truck sales are up 36 per cent over '32. Optimism runs high.

1934

National Automobile Chamber of Commerce becomes Automobile Manufacturers Association.

First ATA convention — operators endorse "self-regulation."

Trucks now handle 51.6 per cent of livestock shipments.

Voltage-control regulator first appears on Cadillac cars.

Baltimore Transfer Co.'s first all-aluminum, chassis-less, monocoque semi-trailer weighs 2645 lb less than conventional jobs.

Power is transmitted through fifth wheel on new dump trailer from Fruehauf.

1935

Supreme Court ends the NRA.

Motor Carrier Act of 1935 (Part II of Interstate Commerce Act) authorizes Federal regulation of motor trucks engaged in Interstate operations.

ICC forms Bureau of Regulations for motor trucks with John L. Rogers as chief.

Cummins brings out small Model "A" diesel—331 cu in.

Marmon-Herrington puts all-wheel drive in Ford V-8 trucks.

U. S. Steel introduces "Cor-Ten" for commercial bodies.

Dayton Power & Light Co. is pioneer user of aluminum bodies on line service trucks.

1936

Civilian Conservation Corps, established in 1933, is now the country's largest fleet operator, with 24,000 vehicles.

Fruehauf offers an integral aluminum trailer with savings of 1400 to 1700 lb on deadweight.

Diamond T produces a diesel-powered truck.

Metropolitan Body Co. builds "Metro Conversion" — the first man-high, walk-in type body.

Keeshin developing coast-to-coast network of 17 truck lines.

Tocco Division, Ohio Crankshaft Co., develops heat-treating process for crankshafts.

First rayon truck tires.

1937

ICC issues regs (to become effective in 1939) covering driver qualifications, driving rules, safety equipment and accessories, and reporting of accidents.

Commercial Car Journal publishes its first Fleet Operators Reference Annual (in April).

First National Truck Roadeo.

Oldsmobile and Buick offer automatic transmissions as options on '38 models.

Automotive Safety Foundation is organized this year.

1938

ICC estimates that 39,000 for-hire carriers are operating 200,000 trucks.

General Motors introduces 2-cycle diesel line.

COE lines are added by Chevrolet and Ford.

The "White Horse" bows . . . has 4-cyl, air-cooled engine mounted at rear in removable power unit.

Mack develops its "Thermodyne" engine . . . also announces that the Mack-Lanova diesel will be built at the Mack plant.

Some emergency fleets use two-way radio, but frequency allocations are tough to get.

1939

American Association of State Highway Officials adopts AASHO code for uniform size and weight standards.

BPR study shows that 80 per cent of trucks using main rural roads are making trips of less than 20 miles, one way.

First Fleet Supervisor Course at Penn State University.

First Peterbilt truck.

National Council of Private Truck Owners (later to become Private Truck Council of America) is organized.

"Sealed-beam" headlights, laminated safety-plate glass, automatic overdrive become popular.

New Crosley line includes a ¼-ton pickup truck.

Lindsay Structures available for prefabricated truck bodies.

1940

Pennsylvania Turnpike, first of the new toll roads, is opened for 160 miles.

AMA "approves in principle" truck capacity ratings.

SAE recommends that engine maximum hp shall be measure of the load that can be pulled.

First annual course in vehicle fleet safety is sponsored by National Safety Council.

AMA estimates that there are now 3,665,956 truck drivers.

Private truck operators in Interstate Commerce come under ICC safety regulations.

Safety Equipment Manufacturers Association is formed.

Dodge builds 20,000 special trucks for U. S. Army.

Fruehauf is now offering stainless-steel trailers.

1941

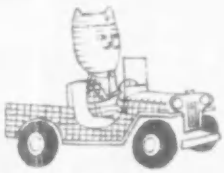
Truck production goes over the million mark as the nation gears for war.

New trucks rationed. Truckers must prove need.

For first time, Army moves complete fighting unit — the 153rd Infantry Regiment — entirely by commercial motor vehicle.

Willys starts producing "Jeep."

1942



Office of Defense Transportation is formed—introduces comprehensive Preventive Maintenance Manual—big boost for fleet PM.

ODT okays truck-pooling plan.

National speed limit is set at 40 mph . . . later 35 mph.

Nationwide gas rationing.

Modified AASHO size, weight limits reflect wartime emergency.

Secretary Ickes (who later lambastes trucks) pays tribute to the industry's war efforts.

Truck-Trailer Manufacturers Association is organized.

1943

Ceiling prices on used trucks.

Buna S tires are introduced.

War Production Board states need for 4-fold increase in truck production if transport requirements are to be met in '44.

1944

Only synthetic tires are available for non-essential driving. Butyl rubber appears in truck tire tubes—this is one synthetic with a future.

In November—War Production Board okays manufacture of first light civilian trucks since '42.

AMA issues list of 226 types of military motor vehicles.

Vacuum power-booster brake developed by Bendix Aviation.

Federal government takes over 103 strike-bound truck lines in Midwest, as emergency measure.

Advanced, wide-base rims show increased tire mileage.

1945

War is over. Rationing ends. Most companies are returned to civilian production.

Some War Production figures:
General Motors — 740,000 trucks, 31,000 tanks.
Dodge—340,000 trucks.
Studebaker—150,000 trucks, 50,000 B-47's.
White — Large number of "half-tracks."

Ford—Most of the B-24's.
Chrysler—Tanks and engines.
GMC—The 2½-ton amphibious "duck."

Some synthetic tires look good. And rayon cords prove successful in truck tires.

Cummins introduces NH-600 and NHS-600 high-speed diesels.

American Petroleum Institute classifies regular, premium and heavy-duty motor oils.

Licenses granted by FCC for experimental truck radio operation in Chicago.

1946

BPR estimates there are now 12,773 diesel-powered trucks and 5092 diesel-powered buses.

National Highway Users Conference institutes first Highway Transportation Congress . . . recommends state size, weight limits.

Price ceilings suspended on trucks of more than 40,000-lb GVW and special jobs.

Natural rubber is used for 94 per cent of truck tires (8.25 in. and larger).

Fruehauf introduces torsion-bar suspension for trailers.

Bostrom comes out with hydraulic seat for driver comfort.

Mack announces the 10-speed Mono-Shift transmission.

Thompson produces the rotating valve cap.

Lyncoach & Truck offers a front-wheel-drive, integral body-and-chassis delivery unit.

1947

ATA launches National Safety & Courtesy Program.

AMA estimates 5½-million employees in truck transportation, 75 metropolitan areas receiving all milk supply by truck.

Ted V. Rogers resigns as ATA president after 14 years.

Wire cord tires are tested for heavy-duty operation.

Goodyear introduces an all-nylon ply tire.

Leece-Neville develops lightweight AC-DC alternator.

1948

Highway Research Board undertakes extensive study of economics of vehicle sizes, weights.

ICC decision in Lenoir Chair Case establishes "primary business test" as important factor in determining difference between private and for-hire haul.

First tubeless tires.

ATA adopts trailer interchange plan this year.

National Truck Body Manufacturing Association (later TBEA) is organized.

Dodge introduces "Route-Van" with very low floor, modified rear axle and fluid drive.

Passenger cars are now used by more than 632,000 salesmen.

1949

American Automobile Association (believe it or not) passes a resolution urging separate highways for trucks.

Commercial Car Journal publishes first annual Fleet Buyers Directory, in November.

Technical groups discuss the merits of cold rubber, multi-viscosity oil, lag time in air brake systems, and possible danger of using front wheel brakes on combination rigs.

White introduces 3000 series, first production tilt-cab COE.

Strick produces a roll-off roof for van trailers.

Eaton introduces electric control for 2-speed axles.

ICC clears Burlington Mills as private carrier—another important "primary business test."

1950

Korean War begins. Military orders pour in to Reo (for the "Eager Beaver"), Dodge, Ford, IHC, Willys, GMC, Studebaker, Allison, others.

U. S. Senate introduces huge transport inquiry to re-evaluate policies that were set forth in the transportation act of 1940.

Maryland Road Test is first of big BPR projects to evaluate the effect of heavy and frequent loads on highway surfaces.

ICC reports that mechanical failures cause one out of every 13 accidents.

Boeing introduces first gas-turbine engine for trucks.

Fuller makes 10-speed, single-lever "RoadRanger" transmission.

Pacific Intermountain Express develops the "dromedary" . . . on a Peterbilt chassis.

Greyhound orders 761 diesel buses from GMC Truck & Coach.

Wolf Engineering Corp. offers "power-package" for trailers.

1951

Office of Defense Mobilization heads a battery of Washington agencies in gearing truck makers and fleets to maximum Korean War effort.

First of the many challenging highway safety articles by Don Buck is presented in **Commercial Car Journal.**

New York enacts ton-mile tax.

New Jersey Turnpike, second of the great toll roads, is opened for 118 miles.

1952

GMC builds trucks in 20,000- to 35,000-lb GVW range . . . Hydra-matic transmission made available on ¾-ton models.

Reo and International Harvester offer LP-gas engines as standard options.

NHUC develops PAR (Project) Adequate Roads) designed to pinpoint needs for new highways.

ICC completely revises safety regulations. Breakaway brake valve required for first time.

GM offers its first air-suspension bus.

American Transit Association introduces "Transit Pars."

Ocean Van Lines begins container service—Seattle-Alaska.

1953

Pennsylvania truckers begin their $250-million suit against the railroads.

WASHO road test at Malid, Idaho, is underway—the second of the big road test series.

ATA Foundation organized.

ATA sponsors commemorative stamp for the 50th Anniversary of the first commercial vehicle contest sponsored by Automobile Clubs of America.

AMA estimates that 76,000 diesel trucks are now registered.

1954

Nash and Hudson merge to form American Motors Corp.

PIE introduces air-suspension trailers built by Fruehauf, Brown and Strick.

White and Mack introduce 96-in. conventional tractor.

Ohio sets up axle-mile tax.

Much talk about selective rate-cutting by railroads.

1955

Piggyback for common carrier trucks on Pennsylvania Railroad.

Tubeless tires are available for large trucks.

Tire and Rim Association standardize on drop-center rim for tubeless tires up through 11-in. cross-sections. Larger sizes to use rubber O-ring.

National Trailer Pool organized with 13 fleets cooperating.

1956

Highway Act of 1956 sets up plans for new 41,000-mile Interstate system.

ICC bans trip leasing of less than 30 days, effective March 1.

GM has air-suspension trailer.

New Allison transmission with retarder is offered by Chevrolet.

Western reciprocity agreement is signed by nine states.

Malcolm-McLean sells interest in McLean Trucking Co., obtains control of Trans-Atlantic steamship, begins "fishyback" operation from Gulf ports to East Coast.

PIE and Kenworth develop 4-axle "dromedary" tractor with two front steering axles.

Ohio Turnpike open full length.

Much talk about selective rate cutting by the railroads. Railroads propose the famous three "shall nots."

Federal weight tax on trucks over 26,000 lb. made effective.

Last link of Indiana Turnpike is opened, completing route from New York City to Chicago.

National Automobile Show is revived in New York City with major area devoted to trucks.

TTMA and Department of Agriculture develop system for rating reefer trailers.

ICC proposes "out of service" regulation.

1957

ICC discusses "axle-by-axle" brake regulation—later settles for "vehicle-by-vehicle."

New York Central introduces "Flexi-Van" service.

Autocar introduces 27-cu yd dump truck with 600-hp, V-12 Cummins engine, 85-ton GVW.

Commercial Car Journal begins publishing regular Construction Fleet Maintenance Section.

Spector introduces "mobile-van" service, using 21-ft containers—three to a flatcar.

Continental Trailways offers 5-star luxury bus service.

1958

St. Lawrence Seaway is opened to Great Lakes ports.

Matson offers "fishyback" service to Hawaii.

AASHO road test opens at Ottawa, Illinois.

Commercial Car Journal puts first "Mobile Editorial Office" on the road.

Piggyback service is now offered by 43 railroads.

1959

W. Y. "Ben" Blanning retires as director of ICC Bureau of Motor Carriers. He is succeeded by General Herbert Qualls.

GMC introduces V-6 gasoline engine; heavy-duty highway tractor with air suspension; independent front axle; and V-6 diesel. Bus Division has new "City Slicker" transit coach.

Compact cars appear from "Big-Three" manufacturers.

New York Thruway tests operation of "double-bottoms"—two 40-ft trailers, 98-ft overall length, 127,400-lb GCW.

Dodge offers first diesel.

First "air cars" developed with ducted rotary blades.

1960

ICC okays New York Central rates for auto-transport trailer movement in piggyback service. Rates are as much as 60 per cent under competing carriers.

New lighting regs proposed by ICC stir up heated discussion.

White introduces its PDQ delivery trucks.

Association of Food and Drug Officials of the U. S. proposes AFDOUS code for refrigerated transport of perishables.

ATA opens new headquarters building in Washington.

National Automobile (and truck) Show in new Cobo Hall, Detroit.

First Fleet Maintenance Show in New York City.

Commercial Car Journal heralds era of small-diesel trucks with new Mobile Editorial Office.

ICC spotlights "gray area of transportation."

Strick offers "Stricktainer" — two 20-ft trailers with sliding axles to form single tandem.

Ford and Chevrolet add light, cab-forward, compact models.

Foamed-in-place plastics show bright new future as insulation for reefers, bodies and trailers.

1961

Rail piggyback and selective rate cutting pose serious threats to for-hire trucking.

President Kennedy drops truck tax "bombshell."

Supreme Court reverses lower court decision in Pennsylvania truckers' $250-million suit against railroads.

ATA endorses principle of compulsory arbitration.

AMA-TTMA approve horsepower rating formula for brakes.

Private truck operators battle need for registration with ICC.

Congress and BPR hope they have right answers to financing the Interstate Highway System over the long pull.

IN THE BEGINNING . . .

Nowhere is the theory of truck evolution more apparent than in this early shot from Trailmobile's "tin-type" file. At the turn of the century, J. W. Walters produced this motor wheel, made it work briefly on the streets of New York, then quietly folded his tent. Debatable point: Did he have a truck or a truck-trailer?

FROM DELIVERY WAGON TO SPECIALIZED CARRIER

The motor truck has come far in its first 60 years, will go much further along the road ahead, with big help from hundreds of body and trailer builders, thousands of suppliers.

■ The year was 1898. Out of the Winton Motor Carriage Co. shop in Cleveland rolled America's first gasoline-powered "delivery wagon." It had a single-cylinder, horizontal engine developing six horsepower and the whole thing weighed in at 1325 lb.

Little did Mr. Winton realize that he was starting an industry that would produce 33 million trucks in the next 63 years. Nor could anyone realize the headaches involved. For those 33 million would be built by no less than 1800 manufacturers. All but 31 would fail and even among those only a double handful would remain as independent companies.

Yet the trucking industry has become one of the most successful the world has ever known. The results of its handiwork have revolutionized transportation in America and now provide direct employment for approximately one out of every ten on the American payroll.

Before you have an industry, you must have a producing unit. This, then, is the story of that unit — the motor truck. It can be told in three ways.

Photo courtesy of Antique Automobile Club of America

CAR CARRIERS IN 1899

Not only did Winton produce the first "gasoline-powered" truck in 1898 . . . A year later production had reached the point where this truck-trailer-passenger-car haulaway was practical. The trailer may only have served as a convenience. There is no record of trailer sales.

First, by chronological development—see front and back sides of "Folio for Progress, No. 1."

Second, it can be plotted into four double decades of development—see chart at right.

Third, as here, it can be told within a natural grouping of manufacturing elements—the truck builders themselves, the component and accessory makers, the body and trailer builders and the bus producers.

In each category, our aim is to favor the trend rather than the specific; to note the colorful, avoid the mundane. At the same time the use of company names is mandatory—a calculated risk that we sincerely hope will not leave too many heroes unsung.

The Truck Pioneers

By 1904—the year that the first feeble attempt was made to segregate truck registrations from those of passenger cars—there were 700 trucks. They had been built by approximately 200 manufacturers.

Among the survivors in that starting lineup were such well-known makes as:

Winton—it survives as the Cleveland Diesel Engine Division of General Motors.

Autocar—which entered the field only a year after the Winton in 1899.

White—with a little steam car in 1900.

Mack—which built a sizeable bus in 1900 that was converted to a truck seven years later.

Studebaker—with a 6-ton electric in 1902.

Rapid—which survives as GMC—also in 1902.

Dart—in 1903 with a little 2-cyl model.

Reo—organized by R. E. Olds in 1904, a few years after he had successfully launched the "Merry Oldsmobile."

Several interesting trends were already apparent. The battle between steam, electricity and the internal combustion engine was at its height. At the time, no one knew which way the big development would go. White began producing gasoline trucks in 1910, but continued the steamers, along with the Stanley passenger car, for some years after that.

By 1916, production was 92,000 gasoline to 8000 electric. But—a great many electric-vehicle manufacturers were still in business until the 20's. Autocar entered the electric field, for a brief period, in 1923. And in 1929, two steam-powered buses made a brief splash.

Another little realized fact is that, among those very early makers, trucks were as big and as fast as anyone wanted them to be. The Morgan in 1902, for instance, carried a 10-ton load. A Mack, in 1916, moved a 33,000-lb transformer. Early issues of COMMERCIAL CAR JOURNAL were filled with editorial comment that the industry was neglecting the mass market of the small truck, putting too much emphasis (with too little profit) on bigger models.

Speed was limited only by tires and highways. When the great breakthroughs of the pneumatic truck tire

20 YEAR CYCLES OF TRUCK DEVELOPMENT

History and projection of truck progress falls naturally into periods of double decades. Plotted here are some of the most significant details. At the end of the first two periods, industry marshalled for the great World Wars. Let us hope that history does not repeat, even though a buildup is starting now.

and the beginning of modern highways came along, the truck builders were ready with both power and speed.

There's nothing new about "the horsepower race." In 1909, 2-cyl engines still powered 36 per cent of the trucks. But by 1922, when the "Speed Truck" was in bloom, nearly all had four cylinders. The ones that didn't had six, and Packard had a "12" as early as 1915.

A very modern note continues the point. When, in 1958, the New York Thruway first permitted the use of two 40-ft trailers and more than 100,000 lb of weight, the truck builders were instantly ready with the power and speed to pull them.

But, obviously, we are way ahead of our story.

The pioneer days of the truck makers were filled with success stories, failures and mergers. Early issues of COMMERCIAL CAR JOURNAL had separate departments for all three, and still another contained an itemized list of "Commercial Car Converts." The "obit" column was soon dropped, for obvious reasons. But one make whose demise was violent was the Alco truck, product of American Locomotive Co. . . . This was by far the largest corporation in the field. And the Alco passing was a tough blow to the industry of that day.

Fabulous Ford

Of course, the greatest success story in all automotive history was Ford. No comments on the early history of the truck builders would be complete without mention of the influence of Henry Ford. It developed in two ways—the Selden Patent fight and mass production. Whole books have been written about both. These are the stories in brief:

In 1895, George B. Selden was issued a patent on the basic automobile. By 1900, nearly all manufacturers were paying a royalty fee. When Ford applied for a license he was turned down. So he vowed to fight the patent to a finish. But get this picture—the Selden interests were now a multi-million dollar combine. The Ford Motor Co., organized in 1903, had total bank deposits that year of $223.

Years of litigation followed. But Ford won in 1911, killing the patent and the combine monopoly forever.

Meanwhile, Ford started mass production in 1908 with the famous Model T. By 1913, production

	1901-1920 PIONEERING	1921-1940 BREAKTHROUGHS	1941-1960 BIG LEAP AHEAD	1961-1980 THE GOLDEN YEARS
MAKERS	Hundreds of small builders	Failures, mergers and great successes	More consolidations Leaders on top	From a handful double the numbers
PRODUCT	Most anything to beat the horse	Long haul trucks on pneumatic tires	Economical, compact lightweight vehicles	More efficient, lighter, highly specialized
ENGINES	Heavy, low output Inefficient	More power, less weight Enter the diesel	Much greater efficiency	More evolution, some radical breakthroughs
TRAILERS	Trailers . . . just wagons in tow	The fifth wheel makes "semis" possible	Lightweight High cube	Stronger, lighter; more containers
REEFERS	From wet ice and brine	To eutectics plates and dry ice	Mechanical units and truck-mounted compressors	Perimeter Cooling? Vacuum Bottle?
BUSES	Buses are bodies on truck chassis	First special chassis, then integral unit	Lightweight Air conditioning Air suspension	New comfort New efficiency
COMPONENTS	Electric starter Gas lighting Chain drive Many axle types	Multi-speed transmissions Two speed axles Hydraulic & air brakes Voltage regulators	Automatic transmissions Power steering Alternators "Premium" components	More refinements, particularly in area of longer economy.

reached 1000 cars a day and by 1921 Ford had captured 55.45 per cent of the industry's total output.

Oddly, the truck line was dropped with the advent of the Model T, not to be re-introduced until 1917. But, about 1910, a whole new industry within an industry was born—conversion kits to make trucks from the Model T car. At first, the buyer had to throw away the body. But, in 1914, Ford condescended to sell a chassis alone. The price was $410 (with a rebate if production attained 300,000 units).

In the years from 1914 to 1917, at least ten such manufacturers were heavy and consistent advertisers in COMMERCIAL CAR JOURNAL. It was a thriving business. But, all but one of them folded the very month after Ford announced the truck in '17.

Between the conversions, the pickups on the back of passenger cars, and the trucks, Ford went on to capture 53 per cent of the truck market in 1927, a feat never equalled before or since.

Ford, of course, had many other spectacular accomplishments. The demise of the Model T in '27 and the birth of the Model A in '28 are legend. So, also, is the story of the Ford V-8 in 1932. Colonel Herrington, a co-founder of the Marmon-Herrington Co., told COMMERCIAL CAR JOURNAL this story just a few months ago.

One day he and his partner, Walter Marmon, were celebrating the fact that their board of directors had voted $300,000 for plant expansion to produce a new and greatly improved 8-cyl passenger car to bolster the then popular Marmon-Roosevelt. But they went to lunch in a new V-8 Ford. That very afternoon, they canceled all plans for passenger car expansion, dropped the Marmon car, and decided from that point on to concentrate in specialized areas of the truck and bus field. The reason: No possible hope of competing dollar-for-dollar with the Ford V-8.

Mass Production vs Independent

This Marmon-Herrington anecdote is significant far beyond the individual maker concerned. For it leads up to the key reasons for so many corporate failures. They include:

(1) **Mass production.** Very early, it became obvious that a custom shop just could not compete with huge volume, not only in terms of production, but also in engineering, styling and sales.

(2) **Financing.** Many of the small producers would like to have been big ones, but just could not get the money to do it. Bankers frowned on the newborn, low-profit industry. It is reported that General Motors paid nearly 50 per cent true interest to borrow $5-million in 1910.

(3) **Dealer organizations.** With trucks, as with their passenger car cousins, it soon was apparent that the company that had the most dealers sold the most trucks. Truck purchasing, as well as service and parts, became a local enterprise.

(4) **Advertising.** Many billions of dollars had been spent on truck advertising. All of the big successes have relied heavily and consistently on this important factor in sales.

The Marmon-Herrington story also proves the point that you didn't have to get huge to be successful—you could become specialized. Among the makers in this group today are such companies as Hendrickson, Dart, Euclid, Federal, American Coleman, most of the fire engine producers and . . .

The Four-Wheel Drives

In the field of four-wheel-drive vehicles, FWD played a significant part. In 1909, the company (then known as the Four Wheel Drive Auto Co.) produced a four-wheel-drive automobile affectionately known as the "Battleship." It weighed 3700 lb, had a 45-hp, 4-cyl engine and was probably the first in the country with four-wheel brakes. The next year, FWD offered a challenge of $1000 to any automobile that could follow the FWD for ten minutes. One hundred sixteen made the try and, after the Battleship negotiated the sand and mud, it went back to pull the stalled cars out. For World War I, FWD produced almost 20,000 of its "Model B" ammunition carriers.

Another early entry was the Jeffrey "Quad" with four-wheel drive, four-wheel steering and also four-wheel brakes. It was an antecedent of Nash and American Motors and it, too, played a significant part in World War I.

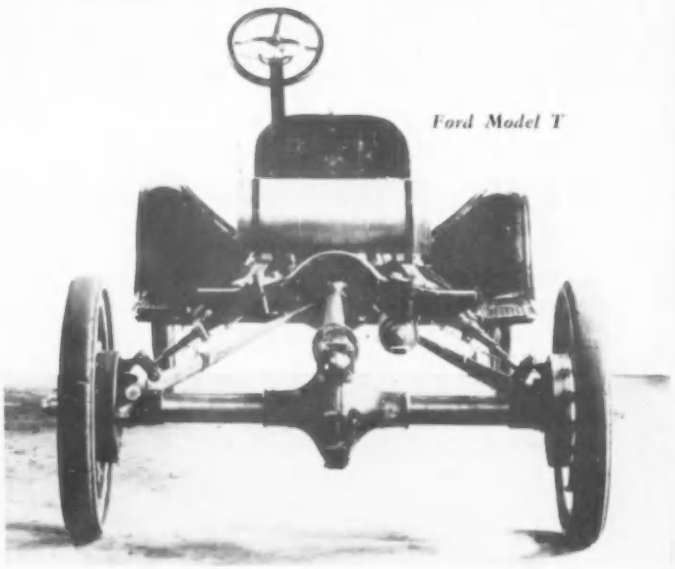
Oskosh and Walter came just a little later and, by World War II, virtually all of the truck producers had four- and six-wheel drives available and in great quantity. Two smaller companies mentioned earlier aided significantly in this development—American Coleman and Marmon-Herrington. Both produce all-wheel-drive trucks of their own (with a high percentage going to

A FEW OF THE GREAT CLASSICS

Symbol of the heavy truck, the "Bull Dog" Mack first appeared in 1914. Modernized continuously, it stayed in production until 1938 . . . First production tilt-cab model was the White 3000. It came out in 1949, had many advanced features, is still in service . . . Model T Ford truck bowed in 1917, captured more than 50 per cent of total truck market . . . Obviously no truck can completely typify today's models, but the GMC model DFR 8000 comes close. It features 48-in. aluminum cab, V-6 diesel, air suspension, independent front end.

Mack Model AC

White 3000



Ford Model T

GMC . . . DFR 8000

THE "BATTLESHIP" WAS FIRST OF FOUR-WHEEL DRIVES

Co-inventor William Besserdich sits beside Four-Wheel-Drive Auto, produced in 1909. Forerunner of the modern FWD, it had four-wheel brakes, challenged 116 competitors to bouts in the mud, won them all.

the export market). But both also developed front-wheel-drive conversion units for the popular makes.

The Famous Makers

Meanwhile, the giants were emerging. Chevrolet's first truck appeared in 1918—a year after the Model T Ford. The Chevy was ruggedly built with a well-proven (since 1913) 4-cyl, valve-in-head engine. But it was not till 1928 that Chevrolet caught up and passed the Ford truck production; became, as it is today, the world's largest truck producer.

Dodge came along at about the same time and, for more than 30 years, held the No. 3 position. Only recently has it ventured into the heavy-duty field with a full line of diesels.

In 1911, an outfit famous for farm machinery decided to build an auto-wagon. Its name, International Harvester; its history, legend. Today, it is the world's largest "independent truck producer" (third-largest volume) and the most diversified line of all, from its new ¼-ton Scout to off-highway giants of better than 50-ton capacity.

Closest competitor from the "scope of models" standpoint is General Motors Coach & Truck. Stemming from a merger of Rapid and Reliance in 1911, the Division is justly proud of many design firsts. Among them: Four-wheel brakes, dual-range transmissions, recirculating ball-bearing steering, full-pressure lubrication, in-line 6-cyl engines, the 2-cycle diesel, the new V-6 gasoline engines and air suspension.

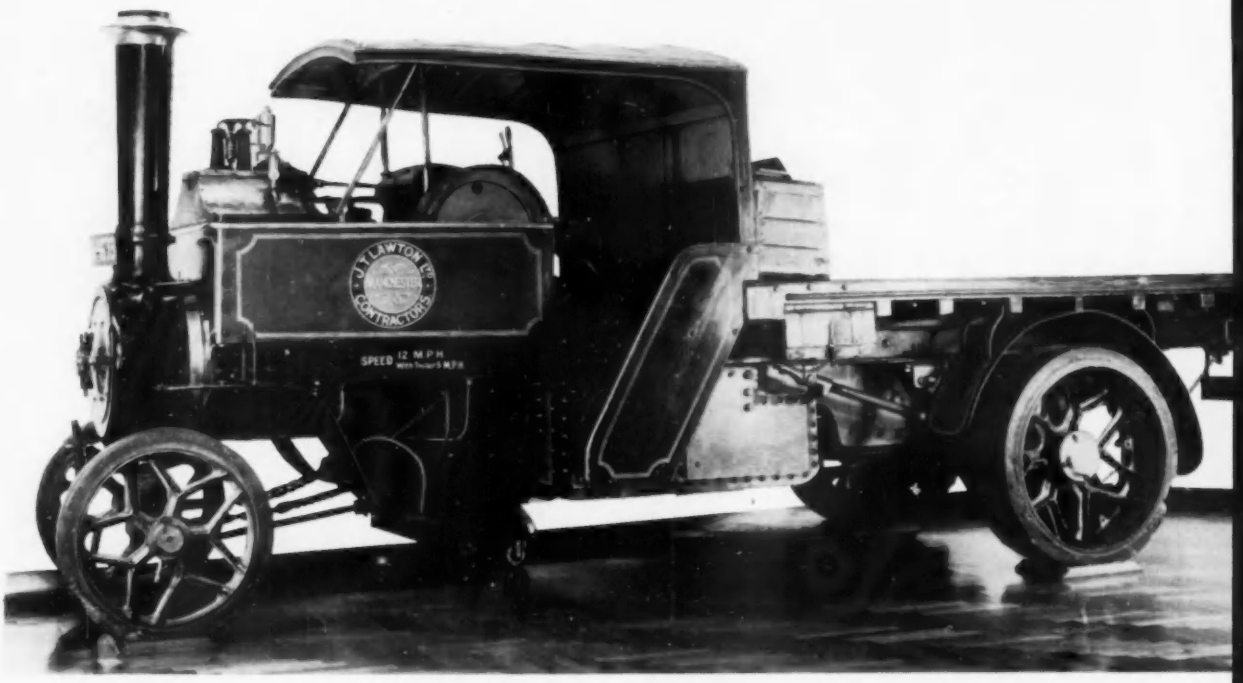
Among today's most famous names are two of the makers who started with small models, went to big models and stayed there. They are Mack and White. And even these have made frequent sallies into the smaller field. White is in the midst of one now—its successful "PDQ" delivery van, which brings back memories of the "White Horse" and other earlier models.

Today, White controls a giant network of producers, including competitive models from Reo and Diamond T and specialized "heavy-heavies" from Autocar and Sterling.

Mack, with Brockway as its adopted offspring, continues as the great proponent of building its own components—transmissions, axles, and even diesel engines. In diesels, it is the only truck company that builds its own (unless you count GMC, which gets its diesel engines from a completely separate division).

And to Mack goes credit for perhaps the most famous truck of all time—one that literally helped shape the face of America. For all, but the very young, will remember the prideful slogan "built like a Mack truck" and the less complimentary "face like a Mack truck," which meant the famous slant-nose Bull Dog of about 1916 and later vintage.

Some makers, like Kenworth, Peterbilt and Freightliner on the West Coast, started with big models and stayed with big ones exclusively. To this trio, by the way, goes much credit for building the big diesel rigs with lightweight components so essential to the early days of West Coast hauling.



STEAMERS DIED HARD . . .
ELECTRICS STARTED BIG

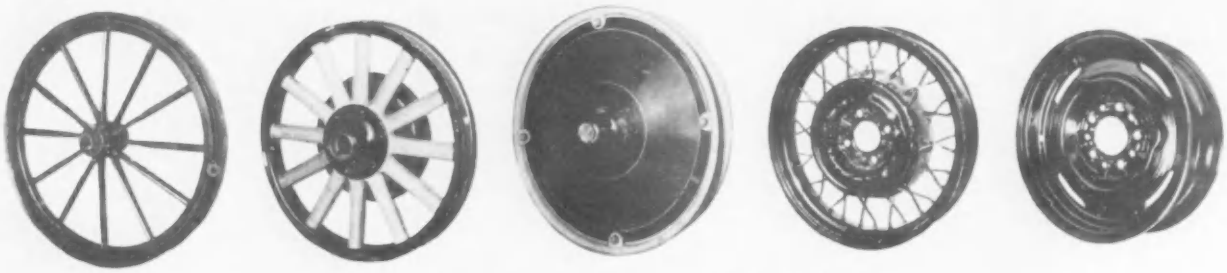
Battle between electrics, steamers and the internal combustion engine wasn't finished until the late 20's. The fascinating steamer above was built in 1920 by Fodens, Ltd. of England. Road speed: 12 mph. . . . The Electric, below, was built for B. Altman & Co., New York, in 1898, by Ricker in Elizabethport, N. J. It weighed 7550 lb, carried a payload of 4000 lb. . . . Both photos courtesy of Henry Ford Museum, Dearborn, Mich.

But one company started with a small specialized model, never tackled the heavy-duty field at all. The first Divco appeared in 1927. It could be driven from up front, or from either side door. Only a little later, it evolved into the classic snub-nosed Divco stand-or-sit drive, still popular today. Together, these models are credited with the final death-blow to the horse in his last stronghold—door-to-door milk delivery. Of course, other makers got into the field and, of course, Divco went on to conquer other fields, especially bakeries. But the early Divco was a striking "first" in truck annals.

The Role of the Suppliers

While the truck makers were getting popular acclaim for their pioneering firsts and great improvements, little attention was paid to the role of the suppliers. Yet few, if any, of those trucks would have been possible without help from the huge supplier group that came into being and developed behind the scenes of the truck builders.

They numbered in the thousands and, because each had the chance to supply several hundred truck makers, their survival rate was higher. Among the group were the greats, the near-greats and the back-alley shops. But, together, they produced everything from basic steels to complete components (engines, transmissions, axles) to lamp bulbs and turn signals.



From Motor Wheel Corp. come these examples of wheel progress.

Many of these companies or their predecessors outdate the Winton truck of 1898. Among them were U. S. Steel, Aluminum Co. of America, Timken Roller Bearing, Wagner Electric, Erie Malleable Iron, Delco-Remy and many of the tire companies. Many more, like COMMERCIAL CAR JOURNAL itself, are in the 50-or-more-year-old category. Among them: Clark Equipment, Rockwell Standard, Borg & Beck, Saginaw Steering, Sealed Power, Dorsey Trailers, Service Recorder and many others.

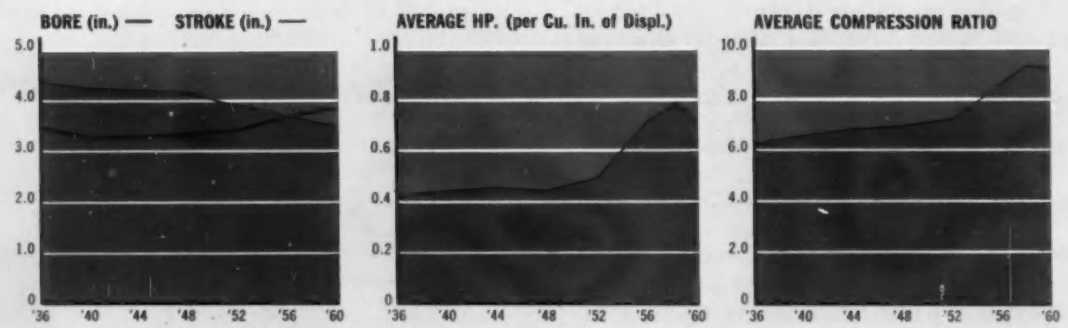
The Basic Metals

Perhaps no single group has been more important through all of trucking history than the basic metal producers. Since the original Winton, the steel has been there for the asking. And it has been greatly improved. From U. S. Steel, for instance, came Cor-Ten, the first of the high-strength, low-alloy steels. That was in 1933. Twenty years later came the T-1 steels featuring great strength for structural components. And only a year ago came the first of the "hybrid" steels for "J-rail" and other fabrication techniques.

Meanwhile other suppliers, such as Parish, developed the first heat-treated frames and specialized manufacturing techniques. Together they added strength, took out dead weight and made the vehicles far more resistant to corrosion.

Only a short while after the turn of the century, Aluminum Co. of America was supplying the industry. Marmon built an all-aluminum body in 1906 and by

Bench Marks in Engine Development



Charts above show significant trends in passenger car engines during last 25 years. Truck models follow similar, sometimes even sharper, patterns.

At left, development of the "over-square" engine is immediately apparent, beginning in 1955. Its shorter stroke and wider bore reduce piston speed and travel.

Chart in center shows how horsepower per cubic in. has almost doubled since 1936; reached a peak in 1958. Largest contributing factor was increase in compression ratio, shown at right. Not available at presstime, but tremendously important, is a similar rise in horsepower per pound of engine weight.

All data from comparative studies by *Automotive Industries*, another of the Chilton publications.

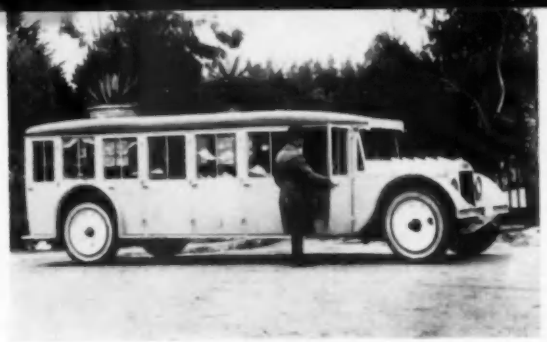
1913 many components were made of the lightweight metal. In 1915, Louis Chevrolet raced an all-aluminum engine and, in the same year, Packard was first to adopt aluminum pistons. The first all-aluminum truck body appeared in 1927.

The plastics came much later with Owens-Corning leading the way. Today, you find plastics in complete cabs like the White 5000, in body sections, trailer linings and transport roof sections.

Big Pneumatic Tires

Of all the breakthroughs along the trucking way, few can equal development of the big pneumatic cord tire for heavy trucks. Only the development of highways themselves played as important a part in converting the truck from replacement for horses to a great factor in intercity freight movement.

All of the tire makers became involved so quickly that it is dangerous to pay specific tribute. But surely no one would argue the part played by Goodyear in developing its famous "Wing Foot" express. For, in 1916, Goodyear proved that trucks could roll from Akron to Boston on a regular schedule. A coast-to-coast run in 5½ days came a year later. And in



Fageol Safety Coach, first with deep-drop, true-bus chassis was built in Oakland, Cal. in 1922.

Later the Fageols moved to Kent, Ohio, organized Twin-Coach and built this first integral bus in 1926. It had twin engines, mounted amidships under the floor.

THE TRUE BUS WAS BORN IN 1922

History of the bus builders parallels that of the truck makers, except for one important detail. For the first 20 years, buses were merely special bodies riding on truck chassis. Some of these bodies were big, fancy and even included double deckers. But the chassis came from nearly all of the truck makers, as they still do for most school buses.

Then, in 1922, the Fageol brothers developed the first chassis designed especially for high-speed bus use. Its frame was dropped nearly a foot lower than comparable truck models of the day. It had an extra-long wheelbase and wide-set wheels; the engine was still out front. Quickly it set the style and pace for both city and intercity use. Other makers quickly followed suit.

A few years later, the Fageols did it again with the first integral bus—no frame, driver up front, and not one but two engines under the floor.

During the 20's, the big bus builders included Mack and Yellow Coach (both with gas-electric models in 1924), White (with its famous "Pancake 12" under the floor) and ACF (using the Fageol engine under the floor).

For the record, it was not until 1932 that the giant of the bus industry emerged. That was the year General Motors developed its first integral bus—Model 700. It had the engine mounted longitudinally in the rear. In 1934 came the V-drive and transverse engine mounting; in '36, a Hercules diesel and in '38 a GM 2-cycle, 3-cyl model.

It was just after World War II when GM began developing its all-aluminum units, air conditioning and later air suspension. By the 50's, it found itself, embarrassingly, almost in complete control of the bus market.

A noble but short-lived experiment was this double-deck sleeper by Pickwick Stages in 1928. It had 26 compartments, lightweight components, removable engine.

First of the integral General Motors buses was Model 700 in 1932. It seated 40 passengers, had a 616-cu in. gasoline engine mounted lengthwise in the rear.

1918, a regular run between Akron and Chicago was scheduled in 35½ hours. This is believed to be the start of Roadway Express and others still active in the Ohio area.

Firestone also played an important part, advertising in 1918 that "half the truck tonnage of America is on Firestone tires." To U. S. Rubber goes the honor of the very first big pneumatic tire advertisement in CCJ.

Of course, little trucks and passenger cars had been on crude pneumatics right from the start. We should not forget that the very first of these dates back to the Michelin patents of 1894.

Along with the tires came the great developments in wheels and rims. The Wood Wheel Assn. was a consistent advertiser in the period from 1915 to 1925. But their products were to give way to the battle of the giants—the cast-spoke and steel-disc wheels of today. There appears little doubt that Erie Malleable, dating back to 1880, was a prime developer of the spoke wheels, or that Budd was the foremost proponent of the big discs.

Rims quietly developed from the early clinchers, through progressive development of demountable types, on up to the tubeless rims of the late 40's.

One reverse footnote to history should be added. There was no doubt that the big pneumatic tires added greatly to the cost. One maker estimated an increase of 60 to 100 per cent without spare, about 150 per cent with spare. So an entrepreneur, in 1924, took a full page in CCJ to promote a new rim that would convert the pneumatic type wheel back to solid tires "in a matter of minutes." But the idea never appeared again.

The Big Components

Engine makers, too, played a vital role. In the period from 1910 to 1920 such well-known names as Continental, Hercules, Lycoming and Waukesha were well established. Articles appeared in CCJ pointing out that the assembled truck had a definite place in the market place. How importantly the trend developed! Today, Mack alone makes all of its major components and even on the Mack there are hundreds of minor items and many major options available from outside suppliers.

During those early days, the big push was for more power through bigger size. From a single cylinder, the engine builders went on to 2, 4, 6, 8 and even 12. Then, beginning in about 1920, came the first big push for more power through efficiency. The horsepower-to-weight curves started up in a hurry.

Improvements in engine design would, however, have been almost completely stymied were it not for the role of the petroleum companies. Developments in gasoline have kept up almost constant pace. The biggest breakthrough of all was the development of tetraethyl lead—the Ethyl additive of today. It came in 1921-1922 from the General Motors Research Lab and was first offered commercially by Standard Oil in 1923. Since then there have come constant improvements in refining techniques, octane ratings and combustion characteristics.

It was not 'til 1931 that the first Cummins diesel was announced and a year later the Indiana truck (later purchased by White) became the first truck with a diesel option as standard. Other diesels came fast after that, but sales through the 30's were mostly to fleets as a replacement item.

The heavy-duty axle was also, to a large degree, a supplier development. The volume producers using passenger car components or adoptions had their own from the early days. But in the larger truck sizes (again with the exception of Mack) the credit goes largely to Timken, Eaton and Clark for major strides in the heavy-duty axle including such refinements as the worm-drive, the two-speed, the double-reduction.

Almost the same story applies to transmissions. From Fuller came the first auxiliary transmission, the first 5-speed transmission with a single lever, the world-famed RoadRanger and air-powered remote controls. From GM's Allison Division came major developments in heavy-duty, multi-range automatic units.

Much the same story goes for brakes. The big volume producers made their own for years. But when hydraulics came, even they turned to Lockheed (built by Wagner Electric) and Bendix as principal suppliers. And soon, from another Bendix division, came vacuum power for brakes.

Foundation brakes for the larger models soon became a function of the axle builders. In greater and greater numbers they came from such suppliers as Timken, Eaton and Clark.

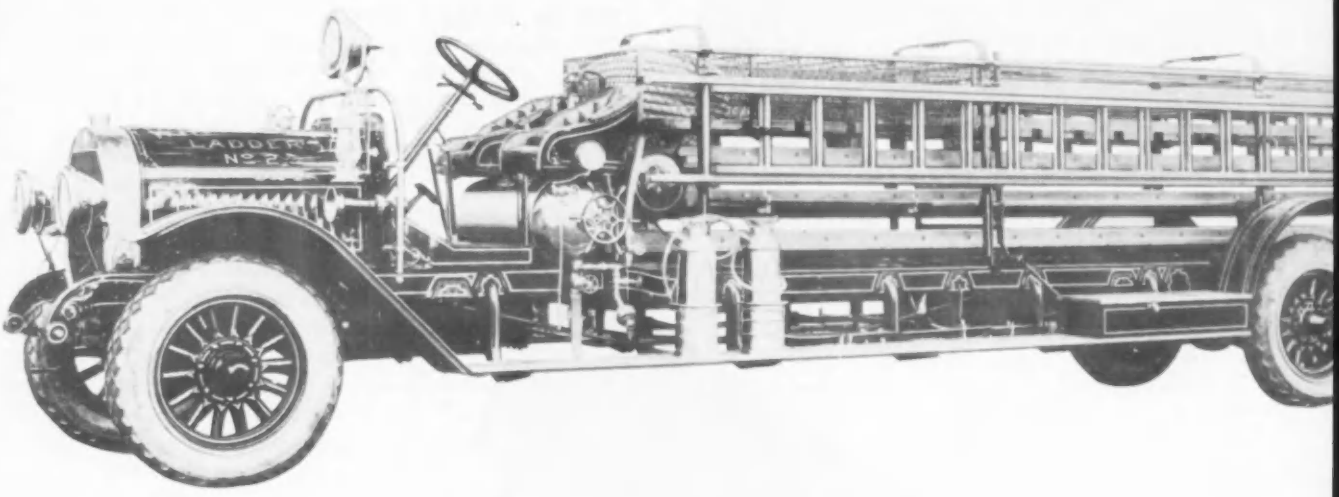
Then, in its January 1919 issue, COMMERCIAL CAR JOURNAL described the Parker "air-brake system for tractor-trailer use." But it apparently was short-lived and, in 1923, Westinghouse Air Brake Co. (now Bendix-Westinghouse) adapted the railroad brake principle to trucks, developed a suitable compressor for engine mounting and produced the first complete air-brake system.

Important Details

Consider now some of the lesser but vital units. From "Boss" Kettering's Dayton Engineering Lab (a predecessor of Delco-Remy) came the electric starter in 1908.

Also from Delco-Remy came the vacuum-advance distributor in 1931 and the automatic voltage regulator in 1935. From Saginaw Steering Division came the recirculating ball-bearing steering gear in 1940 and power steering for automobiles in 1951.

Since 1921, Vickers has been a major supplier of hydraulic pumps and control units. Along with the products of its competitors, these have made possible the tremendous advances in hydraulic power for equip-



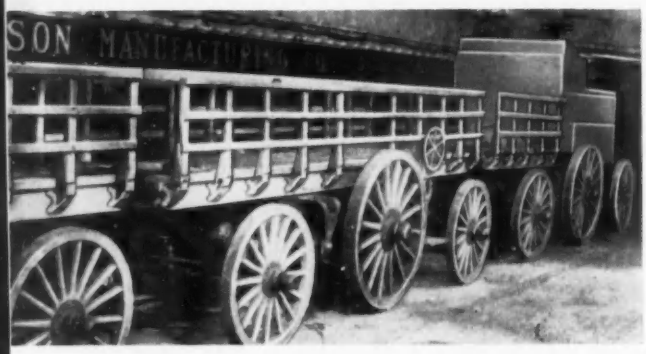
THE GREAT BREAKTHROUGHS IN PNEUMATIC TIRES . . .

started on the short hauls. Big, relatively-light fire engines were among the first. Maxim is proud of this photo, taken in 1915. . . . then came Goodyear's famous "Wingfoot" express. It started in 1916, pounded home the idea that trucks could go anywhere. . . . But not all trucks were even on rubber as the bottom picture reveals. This was a White, in "good roads" service in 1918.

ment ranging from cranes to refrigeration units.

There is a footnote to history in the early days of the Kysor Heater Co. Originally formed to manufacture a combination muffler-heater, the company soon moved into the hot-water heater business. But on the early buses the engines could not maintain enough heat to keep up with passenger needs. Hence, the development of the now famous radiator shutter that found a need at least equal in importance to passenger comfort. Stated simply, it was the need for more efficient engine performance through controlled temperature.

Our history does not name the manufacturer of the



TRAILERS CAME EARLY . . .

too early, in fact, to get an exact reading on this monster, circa 1905. We are told the towing vehicle was electric, that it handled three trailers, each with 2-ton load. Road speed, about 6 mph. Note the big "pivot" wheels on the center trailer.

WERE SPECIALIZED BY 1914

This dumping semi-trailer was built by Jacob Press Sons in 1914. Presumably, the fifth wheel was not detachable, but there was a power-take-off for the front-mounted hoist.

THE FIFTH WHEEL IS BORN

Ancestry of the modern self-locking fifth wheel with slanted platform dates back to about 1915. For the first time, a driver could hitch up his own rig. Before, it took three men with cumbersome jacks. This one is Trailmobile.

first carburetor air cleaner. But early issues of COMMERCIAL CAR JOURNAL were loaded with editorial comment on the need for such a device. Once again, it came from the supplier group. By 1925, many types were available.

Think what the modern truck would be like without its lamps, mirrors, reflectors and related items. Not

a one has ever been built by a truck manufacturer.

Here, the great name in early history was Presto-Lite and its famous acetylene lamp. In the late 20's, the company was still hanging on, with big advertisements suggesting savings in converting from electricity to gas for lighting needs.

Even before gas were the kerosene lamp builders. By far the earliest to advertise in COMMERCIAL CAR JOURNAL was Dietz, still a leader in lighting equipment. Then to Edison, General Electric, Westinghouse and Tung-Sol goes credit for development of the miniature incandescent lamp bulb. And with it came a host of lamp manufacturers. It has not been a spectacular industry, but their products have played important roles in the field of economy, efficiency and, most of all, safety.

The turn signal, for instance, came from one of these accessory builders, became a must requirement in every state. A modern outgrowth is the four-way flasher just made mandatory for trucks in Interstate Commerce.

Speedometers, odometers, hubodometers and even recording tachographs have been a part of the industry since its earliest times. Their makers, too, have progressed with the truck builders.

From the field of electronics came mobile radio . . . first as a receiver set only, then two-way, as early as 1938. With the latter, vehicle efficiency in many cases could be almost doubled. It was available first in emergency applications only—police, fire and utility repair service. Later it came to local pickup and delivery service both for private industry and the common carrier. Today, it is estimated there are about a million mobile transmitters in use.

Up 'til now, we have discussed early suppliers who remained as suppliers. But many of their products were later integrated by the truck makers as standard items. Among them: Windshields (although glass remains as a supplier item), truck cabs (a booming business in the 20's) and side curtains.

Still other supplier companies developed specialties that had long been standard items. Seats, for example, were "maker's choice" designed primarily for economy. But when, in 1942, Bostrom produced the first "suspension" seat, suddenly a whole new section of the industry was born. And since that time, the truck makers and buyers have spent a lot of time and money getting a better driver ride, particularly in the heavy cab-over-engine models.

The Body Builders

Most of the early trucks, like their modern counterparts, were offered either as chassis alone or with a minimum choice of a few mass-produced body styles. Bodies for all the rest of industry's needs came from early carriage and wagon builders.

All sorts of vans came first. Some had quarter sides and a few had rolled curtains from the roof. Quickly came the fully-enclosed wooden van, followed by part-steel, all-steel and greatly improved-steel. Some were part aluminum and all-aluminum.

But the age of specialization came fast. From almost the beginning there were tankers. Fixed tanks were adapted to mobile mounts. Later came the specialized units with light weight and maximum volume.

There were dump trucks by 1904, with hand cranks to tilt the wooden bodies. Then came the steel bodies and power-takeoff rigs. And it wasn't long before the hydraulic piston became universal. Some dumped to the side, most to the rear and a few featured three-way versatility. Like everything else, the art progressed.

Much later came the reefers (see fleet section), the high-pressure liquid containers, the dry-bulk haulers and hundreds of specialized designs to meet the myriad hauling needs of industry.

All of them came from the body builders (and later the trailer makers). A relative few became volume producers, selling on a nationwide scale. Among them Pfaulder with its famous glass-lined tanks, Heil with its aluminum and stainless tanks, Gar Wood with its dump bodies, and a number in the late thirties who specialized in the new man-high, walk-in type.

A famous first here was the "Metro," product of Metropolitan Body Co. which later became a subsidiary of International Harvester and still later, a truck builder too. All of the IH forward-control chassis are now produced there. York, Boyertown and Olson were among those that developed production-line techniques, the last one specializing in lightweight aluminum.

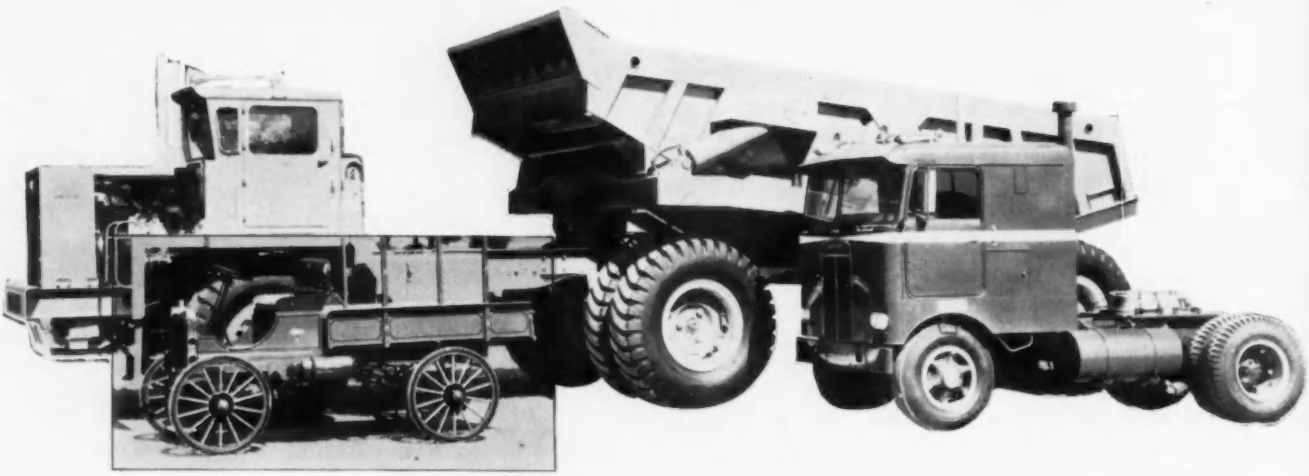
But, by-and-large, the body builders remained small, localized and specialized . . . a custom trade. That is why the body builders still number in the hundreds, while truck makers number in the tens. Body builders don't have to worry about engines, transmissions, rear axles, springs and steering. But they do have to know the specialized wants of buyers, the techniques of quality construction and, most of all, the value of a dollar. Together, they form a major and indispensable part of the trucking industry.

The Trailer Builders

Like the body builders, many a trailer manufacturer had roots in horsedrawn wagon days. Trailmobile goes back to 1841. But there were two important differences.

Most interesting is the fact that the early truck builders didn't like the trailer builders at all. Many of them put special clauses in their warranties, voiding responsibility when their truck was "overloaded" with a trailer. But that situation didn't last long. By 1920, the trailer became the big truck's best friend.

The second difference was in the "cut" of the industry. It soon became evident that trailers would, by-and-large, be the product of fairly big manufacturers with long and mighty production lines. Today,



four manufacturers make a good 75 per cent of the trailers. About 50 more make all the rest.

Of course, the full trailer came first. It could be towed behind anything from a "Model T" Roadster to the biggest truck. As early as 1907, an electric truck pulled a train of three full trailers and nearly 20 tons of load. Then, in 1914, the first semi-trailers with crude "fifth wheels" began to appear. Fruehauf championed the idea hard, followed closely by Trailmobile. And in the May 1916 issue, COMMERCIAL CAR JOURNAL began a series of advertisements by the Martin Rocking Fifth Wheel Co. Among the arguments: "Can't a horse pull more than he can carry?"

The Martin Co. didn't last, but the fifth wheel idea and the slogan certainly did. At just about that time, the first concept of the modern fifth wheel—self-locking and quickly detachable—appeared, and the trailer industry came into full bloom.

Within months, the truck companies—Mack and White were leaders—began advertising truck-tractor models. From that day to this, all of the truck companies have been vying with each other to produce specially-constructed vehicles for maximum efficiency for tractor-trailer units.

Some years later, Fruehauf modified the old Martin slogan too: "A truck can pull more than it can carry." There were violent arguments on the engineering validity of the slogan. But no one held out for long against the trailers' practicality.

From the early trailers, with heavy chassis and bodies of carbon steel, came a series of great refinements. They included development of the first all-aluminum frameless unit in 1934, credited to the Baltimore Transfer Co.—a fleet operator. Fruehauf put a similar product on the production line a few years later. The first all-stainless-steel trailer, also a Fruehauf first, came in 1940.

Standardization of kingpins and coupling devices was one of the first of a series of industry-wide developments. Later came standards for brake connections, lighting circuits, and landing-wheel dimensions.

During the early 50's came another major revolution in the trailer industry. It can best be described as the "quest for cube." Because of lower-density cargoes, fleet operators were demanding maximum space for their loads and they got it in greater proportion. Not only did the trailers get longer and higher (width in most states has been limited to 96 in.), but the floor height got lower and the inside dimension got increasingly wider—up to 93 in., within the 96 in. overall width.

A very recent trend is wide use of roll-up doors on both trailers and bodies. Principal advantages: They can be opened and closed at a dock without moving the vehicle, as was necessary with hinged doors.

Much credit can be shared by Fruehauf and Trailmobile in the development of mass-production techniques. But from the somewhat smaller producers came other significant developments.

It was probably Brown that first developed the demountable full-size container body first used by Ocean Van Line service from Seattle to Alaska. In more recent years, Highway has made significant developments in this field, while Fruehauf and its subsidiary company, Strick, have developed the Twin-20 series consisting of two 20-ft, single-axle semi-trailers that can be combined into one 40-ft, tandem-axle trailer by means of a full sliding-axle suspension.

A STUDY IN TRUCK EVOLUTION

The clean little Dart highlighted in photo was built in 1903. It had a 2-cyl engine, could carry about 800 lb at "up to 10 mph." Astern of it is a modern 220-hp Kenworth COE sleeper, ready to pull its 76,000-lb GCW load "up to 60 mph." Behind both is a 1960 KW-Dart earthmover. Among its specs: 12-cyl, 700-hp. diesel; 100-ton payload.

Also from Strick came key developments in sliding roofs, sliding tandems and demountable containers.

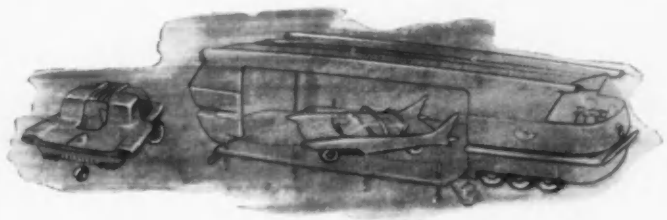
Bartlett was the first trailer builder to use vertical landing gear, no-lubrication tandem suspension, and to offer the first hydraulic-lift fifth-wheel unit for spotting trailers in the yard.

Where From Here?

Together, the truck builders, the body and trailer makers, and a multitude of their suppliers have built the truck to its present form. Now, as we begin the "third 20 years," all eyes and efforts are on the future.

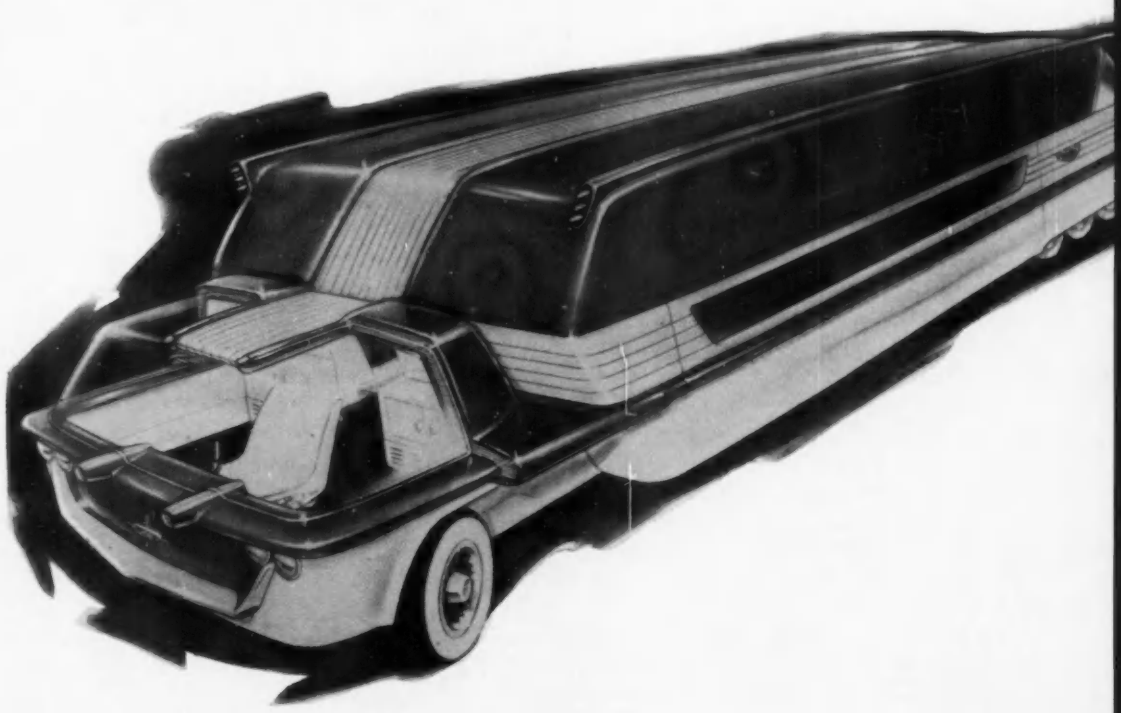
Virtually all of the industry's leaders regard the next 20 years as an era of great growth and development. With equal unanimity they peg it as a time of evolution rather than revolution.

Of course, they could be wrong. A major breakthrough could upset the applecart in a hurry. Two obvious "for instances" are the turbine engine and the revolutionary air-support vehicle. At the drop of an engineering hat, the gas turbine could replace all or most reciprocating engines. But at the moment the turbine costs about $15,000 a copy and, primarily for that reason, does not appear to be an immediate threat. When and if it comes into mass production, chances



THE LOOK OF THE FUTURE

The wheel of fortune spins; where it stops, nobody knows. At left is a specific Ford concept of the modern look. Sides can be lowered (inset) forming ramp to display or cargo space. Single-axle tractor has retractable landing wheel for short-haul maneuverability.



STILL LONGER LOOK AHEAD . . .

from U. S. Steel Corp. . . . shows possible fleet car and tractor-trailer. Intriguing is the size of plastic bubble "allowed" in a steel producer's concept.

are about 10 to 1 it will first challenge the high-output range . . . perhaps 400 hp or better.

The air-support vehicle is even more costly and has many bumpy spots (literally) ahead. The effect of wind, or of sudden temperature changes, and the complexity of control are just some of the headaches that rule it from the immediate scene.

For similar reasons, we can probably dismiss early adoption of the free piston engine, the rotary engine, and even that great potential breakthrough—the fuel cell. Thousands of man-hours are being spent on that last one and the break could come sooner than we think.

In the "sure" column of future trends is much greater refinement of both gasoline and diesel engines. At least one company has very high hopes for the so-called "hydrid" engine, said to combine the best features of both two-cycle and four-cycle, and of both gasoline and diesel. Just this summer, GM announced its new multi-fuel engine line.

There seems little doubt that fully-automatic transmissions will become universal on all-sized vehicles. Despite present apathy, the idea of a driver making up to 20 shifts a mile just doesn't jibe with common logic. Nor does the subject of basic suspensions. Does it make sense that a 96-in.-wide vehicle be supported on a 48-in.-wide spring support?

Obviously, much future development of even the basic vehicle lies in the hands of the highway builders and their administrators. This is especially true with regard to size. Much more comment on this will be found in later chapters.

Tests so far have indicated that operating efficiency goes up as loads go up . . . almost to infinity. Result: If vehicles of 350,000 lb are permitted, there is little doubt that they can and will build them, along with plenty of power, speed, stopping ability and economy.

While big trucks will get bigger, there is also marked evidence that little trucks will get smaller. The trend developed markedly in 1960, with the rash of new small models from Chevrolet, Ford and International Harvester. We can expect much more development through higher efficiency and improved economy in the light-truck field.

It can be said categorically that styling will be functional rather than radical in the commercial field. The reasons are obvious. The fleet operator doesn't want beauty for beauty's sake. But he does want it if it will cut down wind resistance, if it can be truly functional and especially if it can be combined with accessibility and the resultant reduction in maintenance cost.

And there again, we have a focus on the need for major breakthrough—the long-sought-after vehicle that can be driven, say 100,000 miles, without any service at all. Only this year, came a big break in that direction with the passenger cars that can be driven up to 30,000 miles without lubrication.

But this is the logical spot to conclude these comments and turn to the chapter which follows. For it is the fleet operator . . . above all others . . . who will shape and mold the truck of the future. Why? Because the man who buys his trucks a hundred at a time wants them right for his operations.

From the very beginning, his influence has been potent. Now as the individual fleet grows bigger, its buying power gets stronger. And even more importantly, as engineering projects are developed through joint user-manufacturer associations, their group purchasing influence goes higher and higher. That's the story that comes next.

FOLIO FOR PROGRESS

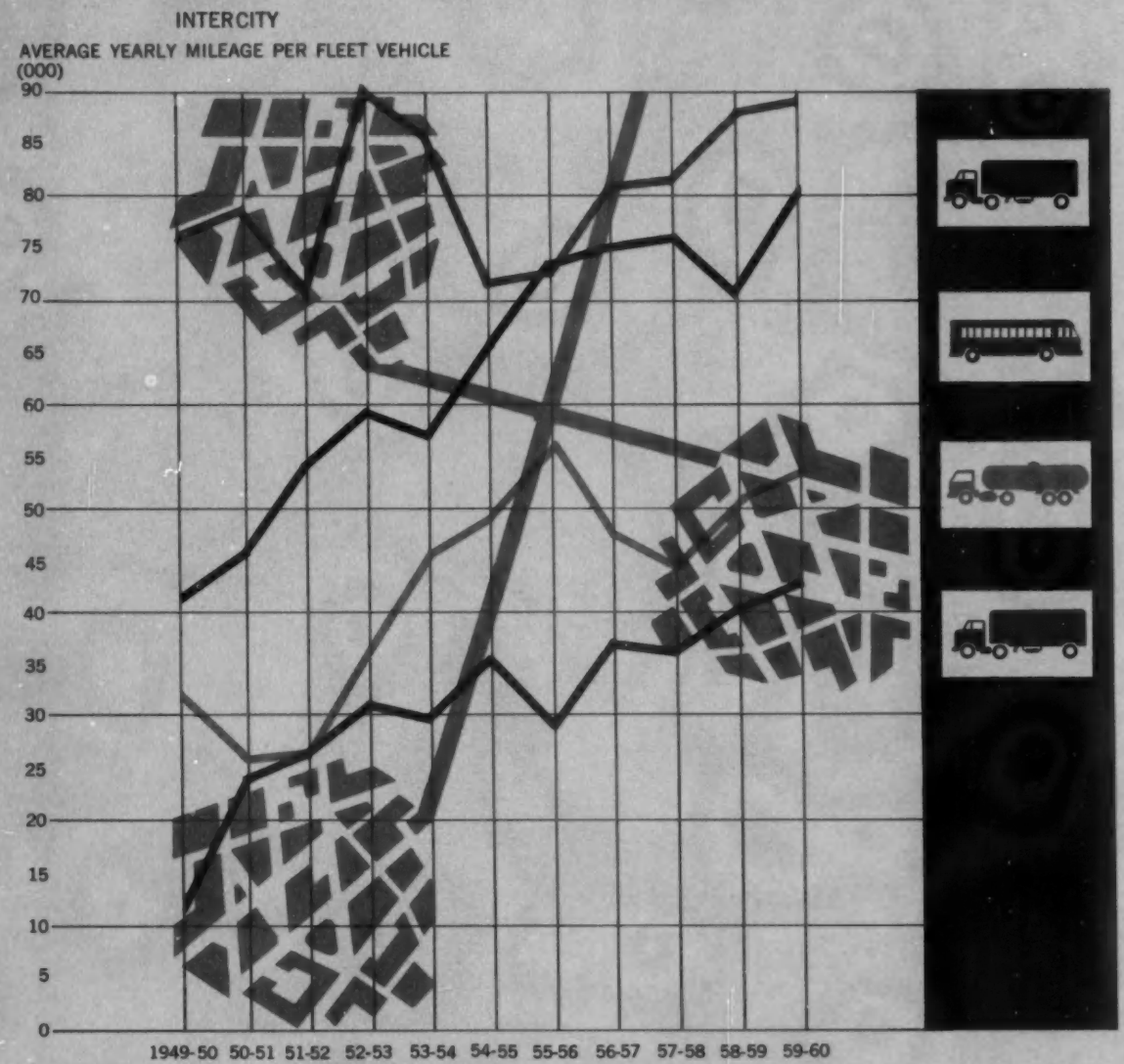
#2

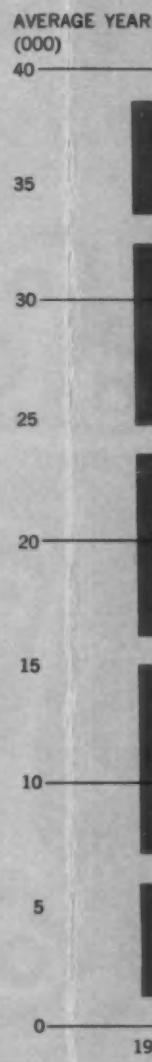
Rolling Up The Fleet Miles

COMMERCIAL CAR JOURNAL
A CHILTON PUBLICATION
56th and Chestnut Streets, Philadelphia 39, Pa.

ROLLING UP THE FLEET MILES

A TEN YEAR GROWTH PATTERN





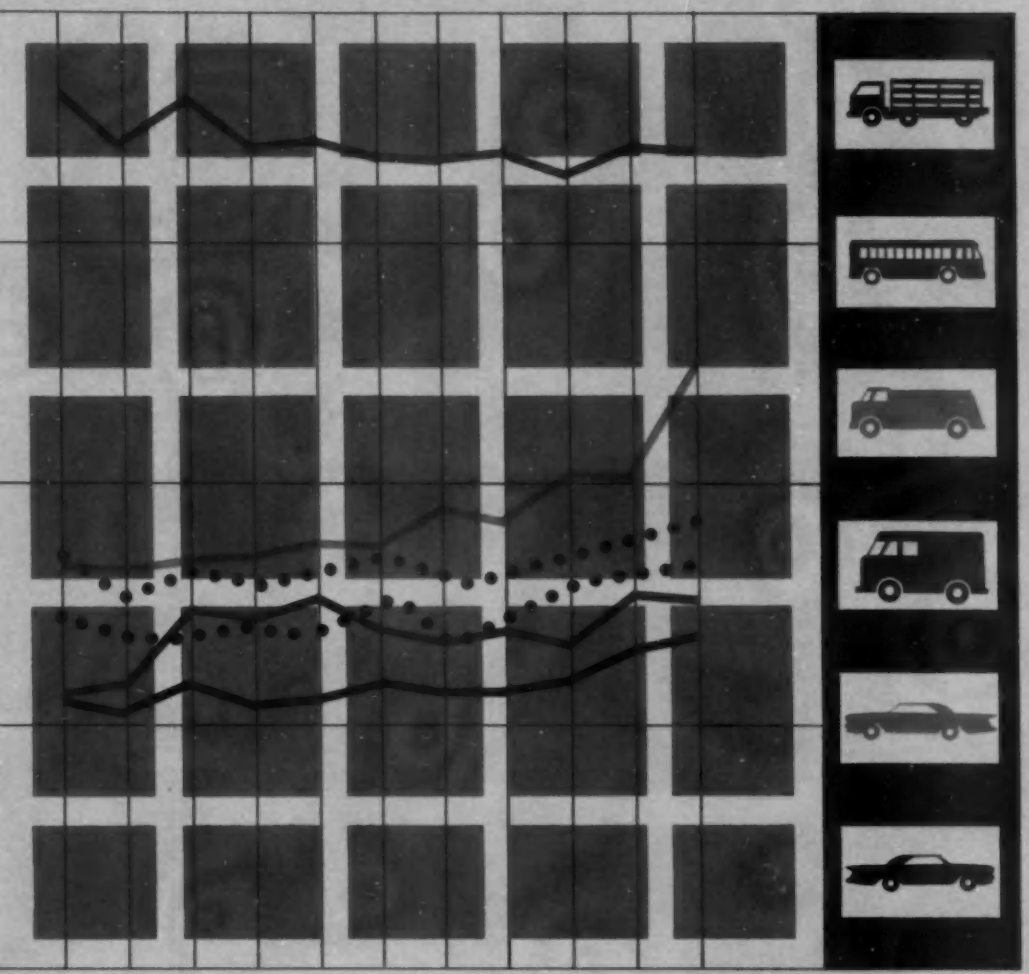
How many miles does the average fleet vehicle travel in a year? We've known that the fleet figures are much higher than those of individually-owned vehicles. But just how high came to light only recently as a by product of the National Safety Council's annual Fleet Safety contest.

Significant growth patterns for both intercity and city fleet mileage are plotted above. Note, for instance, the dynamic rise in average intercity common carrier mileage per vehicle (black line) from 41,000 in 1950 to 80,000 in 1960. Percentagewise, private carrier performance (red line) is

N

CITY

YEARLY MILEAGE PER FLEET VEHICLE



1949-50 50-51 51-52 52-53 53-54 54-55 55-56 56-57 57-58 58-59 59-60

even more startling—from 11,000 in 1950 to nearly 43,000 in 1960. As might be expected, the buses show less growth, even though they lead in mileage, both city and intercity.

Only fleets of 10 or more vehicles are represented in the data. The total number of vehicles varies from year to year from a low of 63,000 to a high of 100,000. But averages for each vocational group are based on a minimum of 900 vehicles each year. Specific mileage data is tabulated on the reverse side.

Common Carriers

Private Carriers

Petroleum Fleets

Buses

Pass. Fleet Cars East

Pass. Fleet Cars West

Rolling up the Fleet Miles

AVERAGE YEARLY MILEAGE PER FLEET VEHICLE

YEAR	Common Carriers	Private Carriers	Petroleum Fleets	Buses	Pass. Fleet Cars East	Pass. Fleet Cars West
City vehicles						
1949-1950	10,828	11,020	16,775	36,810	14,728	17,035
1950-1951	10,203	11,712	16,140	34,173	13,872	15,452
1951-1952	11,928	14,988	16,648	36,601	13,507	16,231
1952-1953	10,897	14,479	17,674	34,174	14,172	15,938
1953-1954	11,209	15,278	17,408	34,558	13,567	16,638
1954-1955	11,926	13,944	17,341	33,916	15,083	17,213
1955-1956	11,483	13,682	18,961	33,853	13,449	16,291
1956-1957	11,604	13,926	18,504	33,986	14,234	16,454
1957-1958	11,989	13,144	20,285	33,017	15,905	17,185
1958-1959	13,340	15,553	20,155	34,461	16,178	17,993
1959-1960	13,796	15,461	25,093	34,221	16,703	18,395
Intercity vehicles						
1949-1950	41,322	11,223	31,614	76,870		
1950-1951	46,243	24,462	25,296	78,879		
1951-1952	54,797	25,756	26,184	71,315		
1952-1953	59,970	30,446	37,066	90,251		
1953-1954	57,243	29,702	45,567	85,731		
1954-1955	66,190	35,476	49,247	71,788		
1955-1956	74,147	28,822	55,298	73,332		
1956-1957	75,276	37,888	46,854	80,765		
1957-1958	75,483	36,897	44,186	81,098		
1958-1959	71,671	39,997	50,788	89,137		
1959-1960	80,643	42,907	53,046	89,748		

WHERE'S THE HORSIE? This was Ole Dobbin's question when American Express pitted No. 9—a friction-drive Consolidated—against the teams. The year was 1907. The truck won easily. A few years later, the fleet was completely motorized.

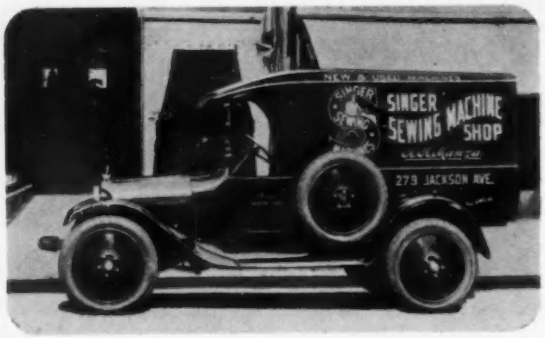
Fleets form the core of highway transportation. Older than trucks themselves, they have had an important influence on vehicle design, have always been the

MOST IMPORTANT TRUCK USERS

■ Today's multi-billion-dollar truck fleet industry is far older than the truck itself. In its first 60 years, the fleetmen came closer to wagging the horse by its tail than any other group in history.

At the turn of the century, illuminating gas was a booming industry, along with the new electric light. Beer was plentiful and popular. Dry goods stores, local bakeries, and dairies were doing a thriving business. Cities and towns were building, watering, and maintaining their streets. And when the train or boat

FLEET PATTERNS WERE SET EARLY. THEY INCLUDED . . .



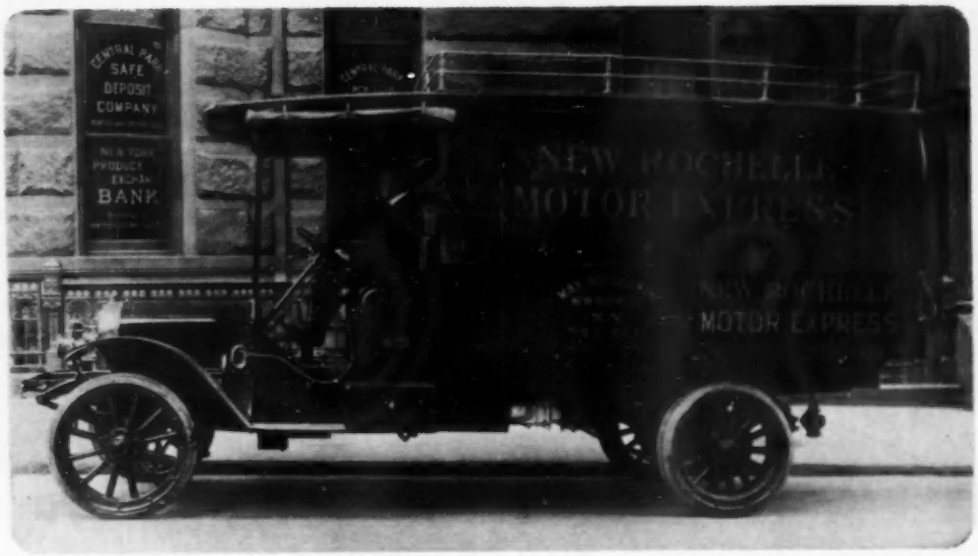
RETAILERS. By 1918, the Singer sewing machine was a household fixture, and many of its community sewing centers were served by Dodge trucks.

BREWERIES. Blatz was one of many that made this industry the largest user of trucks by 1916. This one was a four-cylinder Available.

MEAT PACKERS. An early International Harvester model helped build national fame and distribution for Armour and Co.

MANUFACTURERS. Liquid Carbonic used this 1911 Sternberg in complex distribution set up.

GOVERNMENT. County of Multnomah (Portland, Ore.) developed this street flusher in about 1912. The "air-conditioned" chassis is a 3-ton White.



COMMON CARRIERS. Max Goldstein established "regular route service" between New Rochelle and New York City in 1906. This is one of his two mirror-finished, chain-drive Macks of same vintage.

arrived in town with food, baggage, and supplies of all kinds, the local cartage man was there to haul the goods to destination.

All of these groups had one thing in common—horses and wagons. And all of the "team owners" were looking for a better, faster, more economical way of hauling their goods.

The truck was the answer. They bought it first by one's and two's, then by ten's and hundred's.

Thus, it was only natural that when the Wintons, the Autocars, the Whites and the Macks rolled off those first assembly lines, the existing fleets were a prime target. They have been ever since.

By 1904, the year that the first total truck registrations tabulated some 700, nearly half were in fleets. The utilities, the meat packing houses, the breweries, the department stores bought them first on trial, then on the weight of economics. So did Uncle Sam for the Post Office Department.

In 1906, New England Telephone & Telegraph Co. was using 3-ton trucks equipped with power winches. And by 1912, Philadelphia Electric Co. had elaborate

Horton's Ice Cream Co., in Brooklyn, was early contender for complete "self-service" shop. Even today, few fleets tackle overhaul right down to the frame. Equipment included overhead monorails.

Another Horton was thriving in Charlotte, N. C. This was "Buddy" Horton's headquarters before merger into Associated Transport.

WITH THE FLEETS CAME NEED FOR SELF-SERVICE

Helms Bakery provided indoor storage for this standardized fleet of 1937 Twin-Coach models. Divco absorbed Twin-Coach the same year, introduced its famous snubnose model—still in current production—a year later.

"tower wagons" for servicing street lights and overhead wires. Forerunners of today's hydraulic "buckets," these early models even had driver controls partway up the tower.

A few years later, COMMERCIAL CAR JOURNAL featured a development by Southwestern Tel & Tel in Houston, Texas. It was a five-trailer highway train consisting of kitchen car, dining car, two sleeping cars and a provision car—all hauled by a 2-ton truck.

In 1910, Gimbel Brothers in New York scored an early victory over Macy's, became the first department store fleet to be fully motorized, with 88 gasoline trucks.

Breweries & Fire Engines

About the same time, today's largest brewery—Anheuser-Busch—was also the world's largest fleet. Its famous horsedrawn wagons were being replaced fast by the motor truck.

By 1916, breweries and distilleries were using more trucks than any other industry. But the road ahead was rocky. Alone among all American industries, it was suddenly shut down by the Volstead Act. Then came a note in a 1933 issue of COMMERCIAL CAR JOURNAL: "Survey shows 200 breweries will spend more than $42-million on automotive equipment as beer flows again."

Fire engine companies—both city-operated and volunteer—were early enthusiasts of the truck. Not only could it get to the fire faster, but it could also supply powerful pumping equipment on the job. It wasn't long before cities and towns across the country "reported-in" as completely motorized.

Even without benefit of refrigeration or insulation, ice cream (covered by salt and ice) began to move by truck. By the late teens, the home freezer and the local confectionery store was being threatened by the big ice cream producers. Breyer's, in Philadelphia, was

New techniques for an old responsibility . . . keeping readers posted

In 1961 COMMERCIAL CAR JOURNAL's Mobile Editorial Team re-visits one of the country's oldest—and at one time its largest fleet—Anheuser Busch in St. Louis.

Still the nation's largest brewery, Anheuser Busch reflects changing fleet patterns. From its plants across the country, beer now travels by rail, common and contract carrier trucks and in vast numbers of private trucks owned largely by distributor companies. No matter how far or by what means the thirst-quenching cargo travels, the last mile is always by truck.

Still the nation's No. 1 fleet publication, COMMERCIAL CAR JOURNAL has followed these changing patterns with pioneering steps of its own. The unique, diesel-powered Mobile Office is but a single example.

among the first. For a long time, it was the country's biggest ice cream producer and had the largest fleet of ice cream trucks.

In 1911, somebody stood at the corner of 8th Avenue and 42nd Street in New York City for 10 hours and counted 537 trucks in the passing parade. Four years later, in 1915, the same man at the same corner counted 3309 trucks in the same period.

In a four year span, truck use had multiplied almost six times. More and more articles appeared in COMMERCIAL CAR JOURNAL urging the use of trucks as a means of reducing "both traffic congestion and acci-

Another 50-Year Vet

REMEMBER TH' EARLY PARTS PROBLEM?

"I seem to have broken my drive chain—if I can find a gentle farmer that would let me have th' chain from his model VR wheat reaper—"

REMEMBER TH' 4 SPEED TRANSMISSION?

"To test your destructive ability—not one—not two—not three—but FOUR gears!"

REMEMBER TH' MAKESHIFT CLUTCH RE-FACING JOB?

"Had it not been for th' possibility of my felt hat servin' as your clutch facin'—WOULD YOU HAVE PICKED ME UP? !"

REMEMBER TH' EARLY TUBE TIRE?

"I'm classified as a truck DRIVER—I'd like a chance to practice my profession!"

HAMP LAW

No fleet in history has reflected the day-to-day pattern of truck operations as accurately and as honestly as Kaputi Truck Lines, U. S. A. Organized long before the advent of modern roads and super vehicles, as these sketches reveal, Kaputi is the handiwork of Hamp Law of Louisiana.

A Mississippi flood of about ten years ago wiped out most of the fleet's early records. But since then its antics have been regularly and exclusively reported by COMMERCIAL CAR JOURNAL.

dents." That is a point worth remembering today when somebody blames a tractor-trailer for momentarily delaying traffic. Perhaps a good answer would be: "Would you rather have 50 horses and wagons in its place?"

And, while the trucks were replacing horses to carry goods, they were also replacing the stagecoach and the streetcar as a means of hauling people. The parallel is literal for the bus had not really been born. The buses of those first 20 years were merely truck chassis with a passenger-carrying body. Some, of course, were elaborate and it wasn't long before double-deckers appeared on the streets of New York, Philadelphia and Chicago.

By 1918, the truck had the horse pretty much on the run, but the battle wasn't won yet. In that year, COMMERCIAL CAR JOURNAL published the results of a government survey indicating that there were still 26 million horses and mules in the country. CCJ's research staff went on to figure that it would take 6.5 million trucks to replace those horses and that "at the present rate of production, it would take 80 to 100 years to do it." For the record, the country got them just 20 years later, in 1938.

The Self-Serviced Shops

From the very beginning it became apparent that a fleet of trucks garaged in a converted stable on A Street couldn't economically be serviced by truck dealers variously located on N, Q, and Z Streets. Nor was it efficient to buy gasoline at retail prices on T Street.

So, the first approach to self-service was a gasoline pump installed at the door of the "stable." Not only did it eliminate dead mileage, but it could take advantage of tank-wagon prices. It was soon followed by drums of engine oil and lubricating equipment (operated first by hand and then by air). To supply the air came the air compressor—probably the first, and still the most basic, piece of shop equipment. A little later came the pit, considerably later the lift, then all manner of auxiliary shop equipment. Thus, the self-serviced fleet was born.

As the fleets grew—and most of them did—they built complete new facilities to house and service their "horseless wagons."

At mid-century, 50 years after the first truck replaced a horse and wagon, one of the world's largest dairies (with more than 600 trucks) was still operating a "fleet" of horsedrawn, rubber-tired wagons for door-to-door delivery. Just 10 years ago, we visited this fleet and were fascinated by the "homecoming" procedure. The wagon would be deposited at the loading dock. The horse would be dismissed. On his own, he would leave the garage, go 100 yards down the street and climb a steep ramp to the second floor to be rewarded by the water and hay in his topside stable.

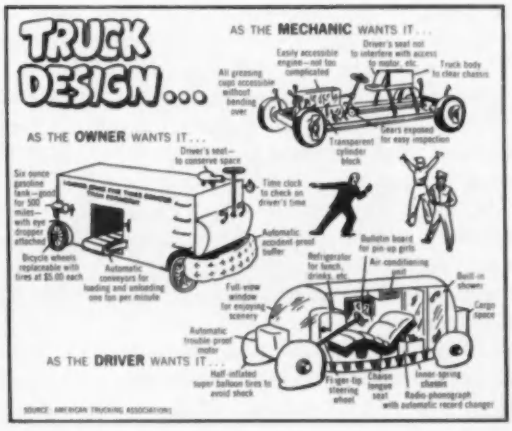
For a while, truck manufacturers and especially their dealers took a dim view of these "self-service" developments. When the dealer sold the truck, he considered

PRR PIGGYBACK IN 1933

Not only was the Pennsylvania Railroad a big fleet operator by the early 30's . . . it also offered containerized piggyback "trailer service." The demountable body fitted on gondola car for rail haul.

FLEET-BUILT TRAILER IN 1934

Baltimore Transfer Co. gets credit for the very first all-aluminum frameless trailer. It was built in the fleet's own shop, several years before commercial production. Photo courtesy of Aluminum Co. of America.



it his property to service and fuel. But soon he saw the handwriting on the wall. He realized that a sale of 100 trucks without service was a lot better than selling one truck with service.

Leasing Starts Early

Just to set the record straight, there is nothing new about leasing, guaranteed maintenance or even contract carriage. In the May 1911 issue of COMMERCIAL CAR JOURNAL, a major article told about a firm which offered "guaranteed delivery service." Among the arguments: "Merchant is freed from anxiety, insurance cost, garage and minor details. All responsibility is shouldered by the service company."

This, indeed, was an intriguing article, for it really reflects the beginning of all three services—leasing, guaranteed maintenance and contract carriage. But they all developed as specialties of their own.

Two years later, a garage man in Rochester, N. Y. offered full truck service on a fixed fee per year. This undoubtedly was one of the first of the guaranteed maintenance contracts. And it contained a specific clause that "if any damage was attributable to the driver, it would be properly charged."

In 1918, COMMERCIAL CAR JOURNAL directed a major article to its dealer readers. The heading: "Renting Commercial Cars at a Profit." Leasing goes back at least that far and has been growing ever since. Today, leasing accounts for roughly 6 per cent of the total truck population.

Intercity Boom

During the first double decade from 1900 to 1920, it was only natural that trucking's major effort was to replace the horse. It was an idea shared by truck makers and fleetmen alike. But there were segments of the industry that were thinking far beyond.

The farmer was saying, "Why can't I take my produce to market by truck?" The city dairymen were saying, "Why can't I bring my milk in from the farm by truck—even by tanker?" Similarly, city food distributors, local cartage men and especially the household movers were saying, "If I can haul products from the southeast to the northwest side of town, why can't I also haul it to the suburbs or even to adjacent cities?" The gleam of the open road was there.

But today, it is hard to realize that in 1904 there were a total of 104 miles of "high-type" paved rural roads in the U. S. A. Beyond the city limits lay mostly dirt trails, or mud, depending on the weather.

A decade later, things were a lot different. While relatively few intercity miles were yet paved, many were "improved."

Among the very first of those intercity truckers were the household movers. It made sense that once a load of furniture was aboard, it should be delivered to final destination whenever possible, rather than be re-handled twice at a railroad station. Thus, by 1913, a COMMERCIAL CAR JOURNAL survey indicated that there were a great many household movers now using trucks up to 300 miles. Only a few years later, they had captured 90 per cent of the volume. It was "balloon" freight (high-volume, low-density) and the railroads just couldn't handle it without crating. The truckers could and it was natural for them.

By 1918, the Post Office Department was also "busting out all over." Motorized postal routes had been established between Portland, Maine, and New Orleans. In July of that year, COMMERCIAL CAR JOURNAL reported that the Post Office was considering a nationwide network of highways "to be supported entirely by Post Office trucks—at no burden to the taxpayers." Unfortunately, such a goal was not realized and Uncle Sam began withdrawing more and more from the responsibility of building post roads per se.

Back Hauls—A Problem

But that didn't stop the truckers. As the city operators pushed out and the farmers pushed in, a new problem was born—back hauls.

A major CCJ article suggested that trucks bringing agricultural products to the city could haul back loads of groceries, hardware and other merchandise "at very reasonable rates."

In 1918, CCJ again philosophized along these lines: "There are now 500,000 trucks, and 350,000 of them run empty one way. These empty trips could handle another 525,000 tons of freight. At three trips a day, this would bring the total to 1,575,000 tons—of wasted cargospace—every day."

It was only natural that the return-load problem became a major issue of the day. The first Return Load Bureau was organized in Connecticut in 1918 and many more sprung up across the country.

At about the same time, "a large mercantile house" in Newark, N. J., advertised that it wanted somebody to share in shipments to Philadelphia. The company had regular shipments coming from Philadelphia to Newark, was looking for somebody with reverse tonnage.

Thus, the long-haul common carrier was born. He came not so much as the local city carrier pushing out, but more as cooperative ventures creating the demand for fast flexible service between the cities.

A somewhat saddening footnote to history is the fact that few of these earliest intercity carriers survived. A look at the chart on page 132 shows that most of today's big intercity "for-hire" carriers were born in the late 20's or early 30's.

When they did start, some began with surprisingly long hauls. Denver-Chicago's **first** run in 1931 was between the named cities, and 20 years later the company was granted first coast-to-coast rights. Meanwhile Consolidated Freightways (a merger of several short-haul companies in 1929) pushed first from Portland to Chicago—then on, to blanket the West.

But by-and-large, there was a long period of cor-

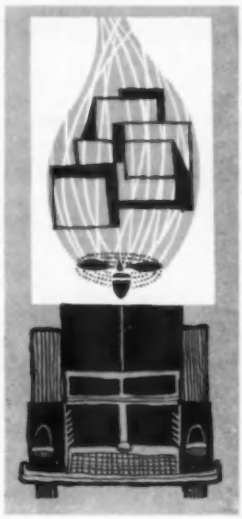
From Wet Ice and Canvas to Mechanization and Foam . . .

THE REEFER STORY

• Truck refrigeration in large measure parallels the development of commercial refrigeration. In a span of 40 years the reefers have used ice or brine, dry ice, holdover plates, mechanical systems and the liquids—CO_2 and nitrogen. Yet each of these systems is still in current use, each has its own advantage.

Insulation has kept pace. From none at all, it has progressed through canvas covers, sawdust, cork, balsa wood, corrugated paper, aluminum foil, glass wool and fiber glass to modern plastics such as Styrofoam and the foamed-in-place urethanes.

As *early as 1882, the ice cream industry used salt and ice in horse drown wagons.* By 1910, the truck was dooming the ice cream specialty shop and the home freezer. By 1916, Breyers in Philadelphia was the world's largest ice cream fleet—with 31 trucks. They still used ice and salt for cooling, but few had any insulation.



• In 1925, dry ice became commercially available. But to be used efficiently, it had to have insulation and a heat transfer surface. Cork and copper containers for the dry ice did the job. Later, aluminum containers formed a part of the ceiling, could be loaded from the outside. Then bunkers were developed. They were more compact with a *fan forcing air over the dry ice* and through the body. Bunkers and fans were also used with wet ice to maintain 45-deg temperatures. And, with this development, other parts of the food industry started to use refrigerated trucks.

The breakthrough to mechanical refrigeration started in 1931. In that year, William G. Finch (who later sold out to Tranter Manufacturing Co.) developed the first holdover plate. This was a flat steel container with tubes and an eutetic solution inside. When the solution was frozen, the plate picked up body heat while the truck was on the road.

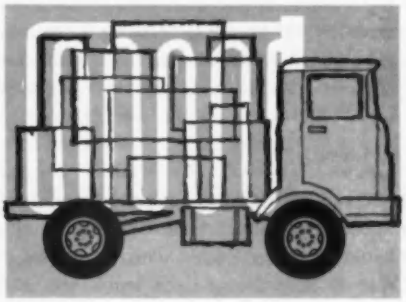
At about the same time, several firms started using removable "slugs" or "inserts"—small eutetic containers without piping. These could be put into a freezer at night and replaced in the truck for the day's run.

In 1935 the "Whitaker Upp" system of continuous refrigeration was introduced. It took its power from the truck engine and could be used either with the holdover plates or an evaporator coil inside the truck.

• Two years later, U. S. Thermo Control (now Thermo-King) developed the *first independently powered refrigerated unit.* From that time on, advancements in mechanical refrigeration have come rapidly, inspired largely by growth of the frozen food industry.

In addition to the self-powered units using gasoline, propane or diesel, the industry provides many truck power options. Among them, power takeoffs from transmissions, propellor shafts or trailer axles; belt drives through fluid or magnetic clutches: hydraulic pumps; and generator-motor units.

Spurred by shipper demand, including the current threat of specific regulations, the industry has developed many cooperative projects. Most notable of these, the continuing research of Truck Trailer Manufacturers' Assn., the Department of Agriculture, the U. S. Bureau of Standards and the testing facilities of The Budd Co. in Philadelphia.



INTERCITY BUSES

Contrary to popular belief, the intercity bus industry is made up of many small fleets. They grew rapidly from the early 20's. Many offered supplemental service to interurban "trolleys," gradually replaced them altogether. Then they pushed out to the long haul, establishing coast-to-coast service by 1928.

Today, about 1000 companies operate approximately 20,000 buses. A few control several thousand, most less than 10. . . . Miles of regular route service are *down* 25 per cent from 1927, yet faster through-schedules, increased capacity and charter service almost make up the difference in passengers carried.

Financially, revenue from charter service now totals 8 per cent of total income, against 2½ per cent in 1947. Income from express packages has quadrupled during the same period.

Better equipment, the hope of regular-route mail and faster schedules on new highways are important keys to the future of intercity bus service.

porate struggle before the real "boom between cities" (see Folio for Progress No. 3) got under way.

It was a big wide scramble and, during that decade of the 20's, intercity trucking fought for existence on a devil-take-the-hindmost attitude. It was a perfect setting for the regulations that were to come in the 30's.

Railroads Asleep?

What did the railroads think of their young competition during those early days? Not very much at all! At times, when they were loaded with freight as during World War I, they thought the truck was a fine idea. Then, when business slackened off, they thought the truck was awful.

The strangest part of all is that so very few got into the trucking business when they could have done so—for the asking. All the way up to the Transportation Act of 1935, they could have started intercity truck lines and, through the same "Grandfather Rights" that kept the older truckers protected, they could have kept on operating. But only a few, like Burlington and the Santa Fe, saw the opportunity. Not a single eastern railroad took the bait.

Much the same was true of piggyback. One of the earliest full-fledged truck associations, organized in Philadelphia about 1913, urged the railroads at that time to carry trucks between New York and Philadelphia. But all three of the rail lines that could have done the job, turned them down. About the same time, the Long Island had a flourishing piggyback service, hauling mostly potatoes. But it was short-lived, and died, probably of the seasonal virus.

It was not until 1931 that the Chicago, North Shore

CITY TRANSIT

Compared with their intercity colleagues, there are more "big" fleets in local transit service—68 of them in cities of over 250,000 population. Yet they too are made up primarily of small properties. The total: 1200 companies operating 50,000 buses and another 4000 trolley coaches.

The bus count is down from a peak of 57,600 in 1950; but seat capacity is up, since virtually all of the newer buses have 40 or more seats.

The biggest headache centers on modern "downtown" which is at the same time more congested and less centralized than before. More people go downtown in private cars (creating the congestion), but fewer people go downtown at all. To add to the confusion, some cities—like Los Angeles—have grown in so many directions there's hardly a downtown left. Any way you slice it, transit loses.

His brightest future centers on cooperative ventures such as "ride and park" facilities, combined bus-rail networks and separate bus lanes. Baltimore has them now, against traffic on one-way streets. Even public support may be the ultimate answer (many of the big ones are already publicly-owned).

and Milwaukee Railroad offered "ferry truck service" on a full commercial scale. This is generally credited as the beginning of modern-day piggyback. But even it was to smoulder and struggle for 20 years before piggyback became a commercial reality.

Highlights to Maturity

Meanwhile, the truckers pushed on through the hectic 30's the booming 40's and reached maturity in the 50's. Many events in that period are covered in later chapters. Included are developments in highways and the great complex of rules and regulations. Also noted are the "influencing factors" that pushed the truck horizons so far and so fast . . . and finally, a long, serious look ahead.

But there were notable highlights along the way:

- The distinct separation between "for-hire" carriers and private truck operators. The first group got all their income from trucks. The second used trucks as incidental to their primary business.
- The National Recovery Act of 1933 and the emergence of the famous "Blue Eagle." The private carriers could extend their industry code to truck operations. But the "for-hire" group had to set one of their own. This was the key that lead to . . .
- Formation of American Trucking Assns. Under the guiding hand of Ted V. Rogers, Sr., of Scranton, Pa., the founding fathers merged two competing groups —The American Highway Freight Assn. and the Federated Truck Assn. of America. They tied the federation to state trucking associations across the nation. The first big job was to hammer out a workable code for NRA. Then, before they had time to catch their

collective breath, they geared for . . .

- The Motor Carrier Act of 1935. This paved the way for regulation of interstate "for-hire" trucking by the Interstate Commerce Commission . . . at first bitterly resented by the truckers, then accepted as necessary for financial survival.

Then came World War II and almost "a holding action by the trucking industry." With aging equipment, no replacements, and limited parts, they carried record loads. And quickly matured.

Associations . . . A Vital Link

Trucks, of all types, found they needed better maintenance, a concerted drive on safety, new labor relations program. And the "for-hire" carriers, especially, needed better public relations, more aggressive sales, more efficient terminals.

American Trucking Assns. provided interchange for all these activities through its various councils. And the founding fathers were smart enough to realize that separate conferences must be set up to meet the needs of all the special groups.

But as the competition grew stronger and the needs of various groups more specialized, other organizations were formed. Among them, the Private Truck Council of America . . . dedicated to preserving the inherent right of businessmen to use trucks incidental to their business . . . and much later the National Assn. of Fleet Administrators . . . for *passenger-car* fleets.

Much earlier the American Transit Assn. and the National Assn. of Motor Bus Operators had been formed to tackle problems of local transit and intercity bus operators. And fleet supervisors of both American Gas Assn. and Edison Electric Institute pooled resources to meet problems of the utility group.

There are also many vital corollary groups. In the 20's, the National Safety Council organized its Commercial Vehicle Section, now sponsors vast safety services and interfleet contests.

In the 30's, Amos Neyhart founded the Institute of Public Safety at Penn State University. Later, under his guidance, it was expanded to include fleet supervisor training at colleges across the country, covering safety, maintenance and operations.

As highways got better and the rules and regulations that went with them became more sophisticated, there was great demand for an organization representing *all* highway user groups. The need was met by the National Highway Users Conference, organized in 1932. With an able assist from the newer Western Highway Institute and its own nationwide staff, NHUC has done yeoman service through the years. A notable highlight: Project Adequate Roads in the mid 50's, pinpointing the need for modern highways *at the places* they were needed most. But by-and-large, NHUC is a service organization, witnessed by the fact that virtually all of the material in the next chapter is based on its data.

And, of course, there was SAE. Organized first as a medium of interchange for truck makers, the Society of Automotive Engineers soon formed a Transportation and Maintenance "Activity" to provide representation for the fleet operator. For years it has served as technical clearing house for hundreds of standards . . . a two-way street for engineering ideas.

And along the way, especially during the shortages of World War II, fleetmen found the need for strictly local groups to share ideas and problems. Today, there are many such groups organized principally within major metropolitan centers.

Fleet Influence on Design

By the 20's, it was obvious that fleet influence was

MOST OF TODAY'S BIG INTERCITY FLEETS, STARTED IN LATE '20s OR EARLY '30s

NAME OF FLEET	CITY & STATE	1960 REVENUE	DATE ORGANIZED
Consolidated Freightways	Menlo Park, Cal.	$99,863,000	1929
Associated Transport	New York, N. Y.	72,451,152	1943
Roadway Express	Akron, Ohio	70,718,792	1930
Pacific Intermountain Express	Oakland, Cal.	58,301,390	1926
Allied Van Lines	Broadview, Ill.	56,794,310	1928
Interstate Motor Freight System	Grand Rapids, Mich.	52,454,298	1924
Spector Freight System	Chicago, Ill.	43,394,524	1929
Transamerican Freight Lines	Detroit, Mich.	43,301,129	1931
Aero Mayflower Transit	Indianapolis, Ind.	42,341,798	1927
North American Van Lines	Fort Wayne, Ind.	41,908,319	1933
Denver Chicago Trucking	Denver, Colo.	40,591,534	1931
Watson Bros. Transportation	Omaha, Nebr.	38,139,070	1926
McLean Trucking	Winston-Salem, N. C.	34,566,374	1934
Eastern Express	Terre Haute, Ind.	32,353,313	1946

(*Continued on page* 135)

The Fleetmen Speak Out

For a special issue in 1948, and again in 1961, COMMERCIAL CAR JOURNAL *asked representative fleetmen to speak out on current truck design. In most cases, the record shows clearly how well their influence has been accepted by the truck manufacturers. But, as most makers know, there is still room for improvement.*

IRISH

GEORGE H. IRISH, *Chief, Transportation Branch, Tennessee Valley Authority, Chattanooga, Tenn.*

1948 We need less vehicle weight, greater utilization of space, lower load platform, much better driver vision. Accessories should last longer . . . particularly electrical. And there is great need for better brakes.

1961 There have been big improvements in most of the items mentioned before. We still need better brakes . . . troublefree with minimum maintenance. The electric brake has promise. Why must we have hydraulics, pneumatics and electrics, if one or at most two sources would do the job? Uniform sizes and weights could free engineers from such projects as sliding axles.

BIXBY

WILLARD D. BIXBY, *Vice President, United Parcel Service, New York, N. Y.*

1948 In our business we need maximum cube in shortest overall length, with minimum turning radius. This means a wide front axle, compact driver cab, little or no space for body stringers. In some cases, we have to build our own.

1961 The same requirements apply. But today we can get most as factory options, even though we usually take more horsepower than we need . . . I anticipate big improvements in engine efficiency, both gas and diesel. So far, the diesel doesn't pay its way in short hauls, but on longer hauls the break-even point has come down from 90,000 miles in 1948 to about 50,000 today.

WILSON

DON K. WILSON, *Director of Transportation, Niagara Mohawk Power Corp., Syracuse, N. Y.*

1948 We would like to see improved crankcase ventilation, longer-life electrical systems, better engine-temperature control, greater maintenance accessibility and a central lubrication system.

1961 We got them all except central lubrication. Few systems are available. Now we need improved communications between maker and user. Utility trucks, for example, are used primarily as source of power rather than for transportation. Labor saving devices will continue to increase and their use affects practically every vehicle component.

BROUER

ORVILLE A. BROUER, *Operating Division, General Superintendents Office, Swift & Co., Chicago.*

1948 Closer cooperation between manufacturer and user could bring marked improvements in (1) fuel mileage, (2) automatic transmissions, (3) accessibility, (4) auxiliary equipment and (5) availability of body options.

1961 It's almost a dream fulfilled. Today we have much better relationship with the manufacturers and marked improvement in all five of the areas mentioned. Now we are setting special sights on more reliable refrigeration, better loading and unloading techniques (the container may be the answer for large-stop deliveries). We may be just around the corner from the electronic highway.

SNEAD

J. L. S. "JACK" SNEAD, *President, Chicago Express, Inc., Kearny, N. J.*

1948 (Then V-P, Consolidated Freightways) It now takes 40 man hours of service for 55 hours of operation. We need a vehicle that can go 500 hours without service. We'd also like less weight, greater stability, much more sensitive brakes and (a long list of) minor improvements.

1961 The manufacturers have come a long way since 1948. We are up to 250 hours with only minor safety checks. Horsepower-to-weight is much better; improvement in brakes has been spectacular; many of the minor deficiencies corrected. Now we should concentrate on noise, smoke and fumes, more progress on the 500-hr inspection target. Much credit is due the cooperation developed through association activities. (Note: For credit due Jack Snead, see page 136).

KELM

GEORGE E. KELM, *Automotive Supervisor, American Telephone & Telegraph Co., New York, N. Y.*

1948 (by predecessor Kay Glynn) Accessibility is what we need most. To get it, we can simplify grilles and tinware. In the bargain, maybe we can get a compact aircooled engine with really automatic controls.

1961 With 80,000 trucks and 18,000 cars, both are important to A T & T. Fancy styling and the horsepower race had us in a bind. New compact vans and cars are a bright ray of hope. Corrosion is still a problem. I'd rather take some of the stainless from trim and put it on brake lines. And watch clearance. We almost go aground on an acorn.

LINDSAY

WILLIAM A. LINDSAY, *Manager Automotive Division, The Atlantic Refining Co., Philadelphia, Pa.*

1948 (by predecessor Gavin Laurie) The motor truck must gain full *public acceptance*. This can be accomplished through safety, performance, utility, appearance and the absence of objectionable noise and fumes.

1961 We have come close to meeting all of Gavin's requirements except in the area of noise and fumes. Engineers should be able to do much to reduce these objectionable factors . . . While improvements in diesel engines have (temporarily at least) outstripped improvements in gasoline engines, I believe that the gas engine may quite likely stage a strong "comeback."

WILLETT

HOWARD L. WILLETT, Jr., *President, The Willett Co., Chicago, Ill.*

1948 We should be able to extend our lubrication and inspection periods from 1000 to 2000 miles on short-haul vehicles. It costs about $12.50 per inspection. Doubling the mileage element would save on cost.

1961 We got the 2000-mile inspection but we didn't save on cost. High fenders, low engines and ginger-bread keep the mechanic from finding the parts. Today the *driver* has a lot better vehicle than he had in 1948. The next improvements should be for the mechanic. Example: An integral bell-and-transmission housing doubles the time to change a clutch.

MOST OF TODAY'S BIG INTERCITY FLEETS STARTED IN LATE '20s OR EARLY '30s (continued)

NAME OF FLEET	CITY & STATE	1960 REVENUE	DATE ORGANIZED
Yellow Transit Freight Lines	Kansas City, Kan.	31,061,262	1924
Ryder Truck Lines	Jacksonville, Fla.	29,806,392	1933
United Van Lines	St. Louis, Mo.	27,503,922	1942
Norwalk Truck Lines	Norwalk, Ohio	26,894,222	1928
Illinois-California Express	Denver, Colo.	25,266,060	1932
Transcon Lines	Los Angeles, Cal.	22,569,841	1946
Hennis Freight Lines	Winston-Salem, N. C.	20,868,565	1932
Mason & Dixon Lines	Kingsport, Tenn.	20,574,424	1932
Wilson Freight Forwarding	Cincinnati, Ohio	19,619,351	1934
Adley Express	New Haven, Conn.	19,187,942	1918
Akers Motor Lines	Gastonia, N. C.	18,481,815	1933
T. I. M. E. Freight	Lubbock, Texas	16,545,652	1927
Emery Transportation	Chicago, Ill.	17,375,341	1934
Ringsby Truck Lines, Inc.	Denver, Colo.	17,163,000	1927
Commercial Motor Freight	Columbus, Ohio	17,052,000	1917
Cooper-Jarrett, Inc.	Chicago, Ill.	16,771,000	1933
Pilot Freight Carriers	Winston-Salem, N. C.	15,713,000	1941
Chicago Express, Inc.	Kearny, N. J.	14,267,000	1943
Central Motor Lines	Charlotte, N. C.	12,668,000	1935

playing a major part in truck design.

It came from many directions, first by individual fleet action then generally through various associations. One of the country's largest fleet networks—American Telephone & Telegraph—pioneered many engineering changes in truck design, working with the factories to get what they needed, not only in the basic vehicle, but in the equipment used with it. Utility fleets joined in.

Local delivery fleets were calling for more and more special design. Outfits like United Parcel Service were beginning to build their own bodies and even a few of their own pilot models.

It was the fleets who demanded and got the forward-control man-high bodies so popular today. And it was the fleets who insisted on light weight. Thousands of aluminum bodies are now in use in local delivery, but not a single truck manufacturer has ever offered one as standard equipment.

Meanwhile, the long-haul common carriers were very active in this regard. Baltimore Transfer Co. deserves credit for the first all-aluminum monocoque trailer in 1934 (see photo, pg 127). It was four years later before such a unit went into production.

Much later, fleets like Pacific Intermountain Express, working with West Coast builders, pioneered such developments as the "Dromedary," small high-pressure tires, high-cube trailers, and air suspension.

Most notable of all were two companies—Horton, in Charlotte, N. C. (later the key factor in Associated Transport) and Consolidated Freightways in Portland, Ore. They built their own trucks!

Associated's Brown trucks became a familiar sight on eastern highways. Outwardly, they varied little from conventional design. Their forte was quality and their cost was high. But the fleet believed that their value in long life and complete standardization of parts was worth the price. They continued Brown production into the 50's; finally dropped it when management felt the truck builders could meet or beat the Brown's performance record.

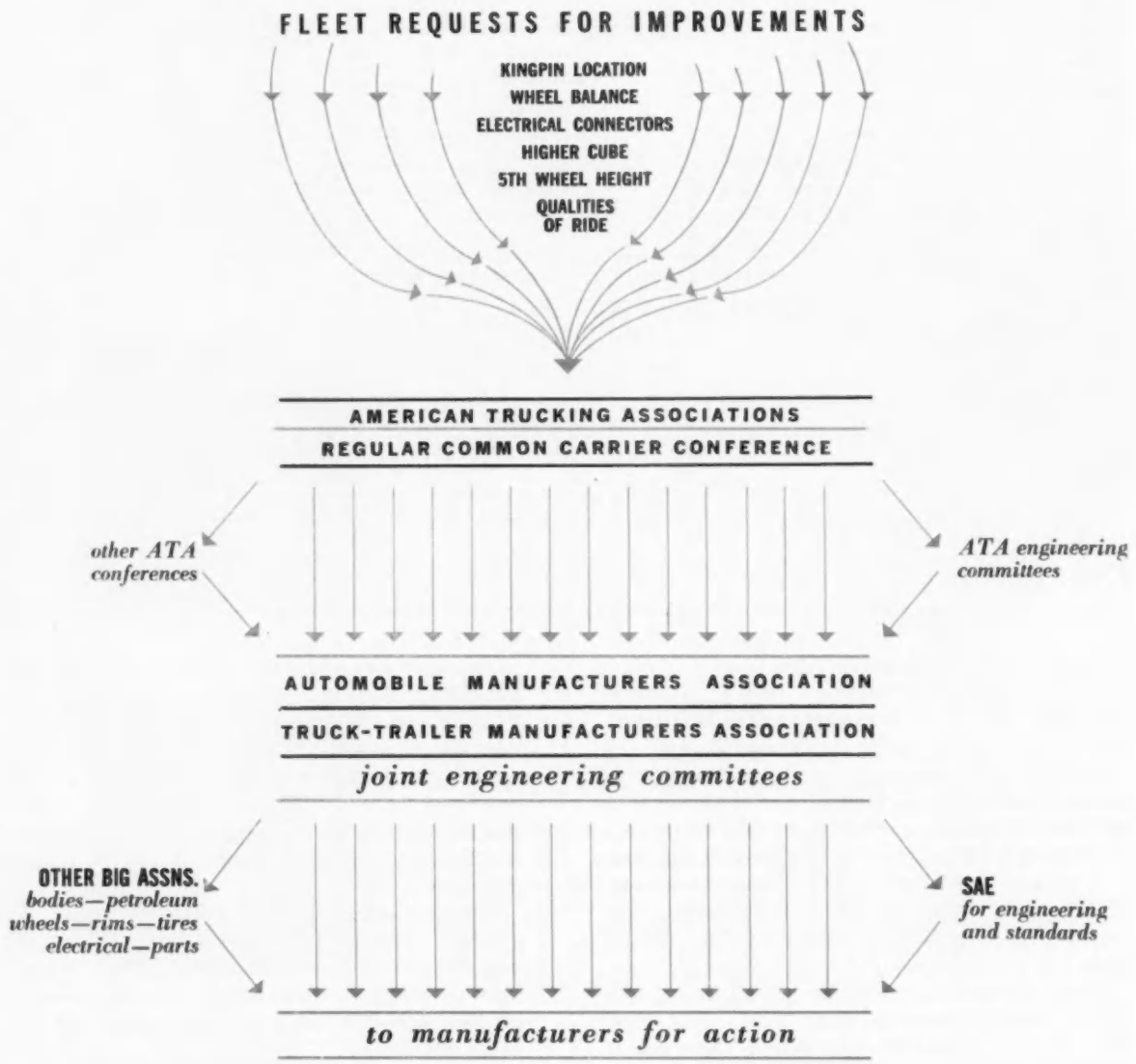
Consolidated's Freightliner, on the other hand, was a radical departure from existing design. From the start it featured a very short-coupled COE of extreme light weight, permitting maximum cube for loads and excellent flexibility within existing western size and weight restrictions.

Unlike the Brown, the Freightliner is still very much alive, still a manufacturing subsidiary of Consolidated, but tied to White for sales.

At First There Was Dissension

What did the truck makers think of all these fleet activities? Not very much at all! Of course there were exceptions. But in all truthfulness, most of the truck makers listened to the fleetmen's ideas, told them individually and collectively that they didn't know what they were talking about. But often, beginning a year or two later, they would incorporate the fleetmen's ideas in their design. This, of course, will be denied. But there is ample evidence that it is true.

The battle continued, took an important turn in 1951.



Jack Snead, then vice president of Consolidated Freightways, had a big idea. That year he was chairman of the Regular Common Carrier Conference of American Trucking Assns. In that capacity, he proposed that the conference organize a regular liaison between its members and the engineering committees of the Truck Division of Automobile Manufacturers Assn. and the Truck-Trailer Manufacturers Assn. He invited manufacturing representatives of these groups to meet with the fleetmen at their conference in Chicago.

Both AMA and TTMA spokesmen admit their suspicions were high and they saw little purpose in sitting down to listen to crackpot ideas from the fleetmen. But, reluctantly, they did listen and they did act. Only a year later, they organized the joint engineering committees of AMA and TTMA. They also reinforced the direct line of communications with SAE. How the setup works is outlined in the accompanying chart.

One of the very first projects was a standard height for fifth wheels. Since then, more than 100 projects have worked their way through this cooperative organization between builder and user.

FOLIO FOR PROGRESS

#3

The Boom Between Cities

COMMERCIAL CAR JOURNAL
A CHILTON PUBLICATION
56th and Chestnut Streets, Philadelphia 39, Pa.

THE BOOM BETWEEN CITIES

INTERCITY TRUCK TRAFFIC

HOW REGULATED CARRIERS ARE DEFINED

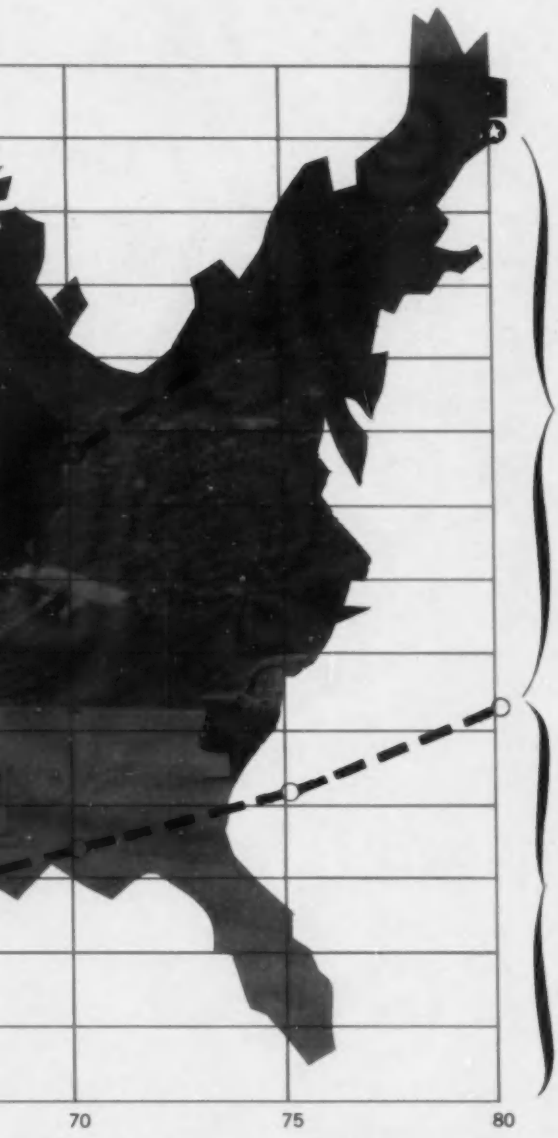
	prior to 1950	1950-56	1957 and later
Class I	$100,000 or more	$200,000 or more	$1,000,000 or more
Class II	$25,000 to $100,000	$50,000 to $200,000	$200,000 to $1,000,000
Class III	Under $25,000	Under $50,000	Under $200,000

Box above shows how the ICC definitions of Regulated Carrier classes have changed. Definitions shown are in terms of annual gross revenue.

Since Class II carriers under the latest definition are still required to submit detailed data on their operations, figures for Class I and II carriers in 1957 are comparable to data for Class I carriers in the period 1950 through 1956.

Although Class III carriers are required to submit annual reports of a limited nature, the ICC has not compiled these data in summary form.

BY ICC



The Boom Between Cities

INTERCITY TRUCK TRAFFIC

The golden years of highway transportation lie ahead. Far more impressive than the total number of trucks . . . see Folio for Progress, No. 1 . . . is this projection of intercity tonnage.

The reason is basic. Bigger, faster trucks on super roads will carry more freight, further, with proportionately fewer vehicles.

As we see it now, total intercity freight carried by *all* forms of transportation is expected to almost double between 1960 and 1980. The estimate for 1960, is 1,500 billion ton-miles. Forecast total for 1980: 2,950 billion ton-miles!

Demand for truck service will grow at an even faster rate than the total demand . . . 131 per cent in the next 20 years.

Trucks' share of total intercity freight transportation is expected to climb from an estimated 18.8 per cent in 1960 to 22.1 per cent by 1980. An even more optimistic forecast of trucks' share of total traffic has been made by the Research Dept. of American Trucking Assns. It calls for trucks to handle 31.5 per cent of intercity freight by 1975.

The more conservative estimate is plotted on the accompanying chart. A slightly more liberal estimate, computed from an entirely different approach, is plotted in Folio No. 5. Like all projections, they are subject to such influencing factors as unforeseen growth in piggyback, or technological improvements in other forms of transportation. *Continued on reverse side*

Continued

But CCJ believes the trucking industry will more than keep the pace . . . will indeed outperform the experts as it has done so often in the past.

Most of the data comes from the Bureau of Public Roads . . . specifically its January, 1961, "Final Report of the Highway Cost Allocation Study." This indicates the growth rate on which estimates of future road needs are being based.

The BPR predictions of the demand for intercity truck service were derived from projections of demand for all intercity freight service. These were based on the relation between Gross National Product and intercity freight traffic. As stated by BPR:

"The existence of a positive correlation between Gross National Product and total intercity freight ton-miles has been established for the period 1929 through 1957. For each mode of transport, varying appropriate periods were used in the linear correlations. Assuming that these correlations will continue, projections were developed through 1980."

Projections of the traffic to be handled by Regulated Carriers are made by COMMERCIAL CAR JOURNAL. They are based on the average year-to-year changes in the 1950-1958 period.

Regulated Carriers include Class I, II and III intercity motor carriers as defined by the Interstate Commerce Commission (ICC). Among them are common and contract carriers. Intercity ton-miles handled by ICC-regulated, but primarily local, carriers are included with the total for "Other" carriers. Traffic carried by private truck operators and carriers exempt from ICC economic regulation is also covered by the "Other" classification.

Specific annual ton-mile data on which the chart is based are given in the table below.

INTERCITY TON-MILES

Year	Regulated Carriers (Millions of ton-miles)	Other Carriers (Millions of ton-miles)	Total
1940	20,683	41,360	62,043
1941	26,835	54,528	81,363
1942	28,083	31,813	59,896
1943	28,768	28,016	56,784
1944	27,253	31,011	58,264
1945	27,289	39,659	66,948
1946	30,448	51,544	81,992
1947	37,693	64,402	102,095
1948	46,706	69,339	116,045
1949	47,891	78,745	126,636
1950	65,648	107,212	172,860
1951	72,292	115,720	188,012
1952	70,843	123,764	194,607
1953	76,510	140,653	217,163
1954	72,301	142,325	214,626
1955	82,906	143,282	226,188
1956	83,015	170,736	253,751
1957	84,408	160,497	244,895
1958	84,339	162,645	246,984
PROJECTIONS (IN BILLIONS OF TON-MILES)			
1960	96.6	185.0	281.6
1965	130.3	229.7	360.0
1970	168.7	266.4	435.1
1975	213.1	324.1	537.2
1980	262.4	388.6	651.0

...WITHOUT HIGHWAYS

. . . . there'd be no fleets. But they pay a stiff price in use taxes and regulation for sharing with others government-built and publicly-owned roads and streets

■ ROADS AND streets are as essential to fleet operation as men, vehicles and fuel.

But highways are publicly-owned facilities. All vehicle owners share in their use, giving rise to regulation —"The rules fleets live by."

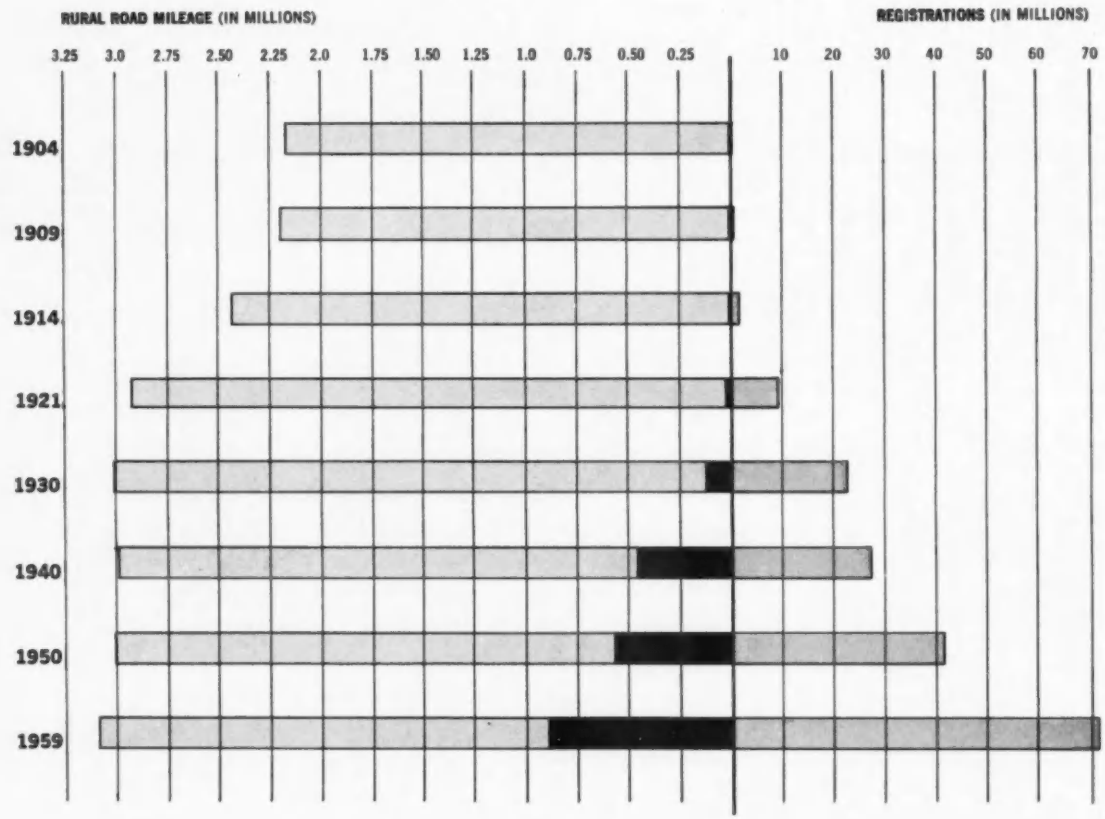
And, being government-built, they are paid for through taxes. Fleet operators share in this, too.

First chapter in this special issue traced vehicle development. During the same 50 years—without deciding the "which was first" argument—came better highways.

Narrow, twisting, high-crowned roads are on the way out. Limited-access, multi-lane expressways, such as the Interstate System, are growing. Weak-kneed bridges belong largely to yesterday. What used to be all-but-impassible obstacles are now the ways to go—for example, San Francisco's Golden Gate Bridge or Baltimore's Harbor Tunnel.

Without highways, there'd be very few trucks. But without trucks, roads would still be "stone age" as compared to modern highways. Top photo, taken in 1924, records an early "Let's get out of the mud" project. Bottom photo illustrates some of the automotive power that helps build today's Interstate Highway System.

HIGHWAYS AND THE NEED FOR THEM



Highway progress for today's cars, trucks and buses cannot be measured in terms of total rural road mileage. Since 1904, it has only increased one per cent a year. **Paved mileage** is a better yardstick. It tends to increase in proportion to registrations, is now 6000 times greater than 1904's 144 miles of paved rural road.

This early promotion for better highways had a dual purpose. Signs on trucks read "We want good roads" and "Ship by truck."

How did this progress in road building come about? And where does it lead?

Early horsedrawn intercity commerce began to decline about 1830, as steam railroads and inland waterways took over. For the next half century, most adequate-for-their-time roads stopped at the city limits.

Actually, it was bicycles that sparked a new demand for roads leading out of the city. It made itself felt around 1880, when the League of American Wheelmen came into being. By 1896, some 4 million bicycles were helping make life difficult for the first few automobiles.

Ironically, the same steam that powered the railroads into overshadowing road commerce now began to build roads. There were steam- powered rock crushers, tractors, mortar mixers and rollers. Without these, the motor vehicle could have remained a novelty.

Highway progress since that time is indicated in the chart at left. Total rural road mileage has increased by about half since 1904. But today's **paved** rural mileage is more than 6000 times greater than 1904's 144 miles!

Even this doesn't tell the whole story. It's hard to measure in figures such intercity highway progress as more and wider lanes, broader shoulders, stronger bridges, better sight distances, easier hills, and other factors that add up to safety, economy and comfort. But such progress was not accidental.

Mud, Muddle and 1973

Among the earlier promotions for better roads was the first automobile reliability tour in 1904. Leaving New York, they headed west. A surprising number of the participants (appropriately called "Mudlarks") reached their goal—the St. Louis World's Fair.

Such tours became quite popular. Most famous were those named after wealthy automobile enthusiast Charles J. Glidden. For 10 years, between 1905 and 1915, they drew attention to the need for improving intercity highways.

The farmer got in the act early too. Starting in 1907 and working through the National Grange, he has worked steadily for better farm-to-market roads. Associations promoting specific routes also sprang up at this time. Most famous was the Lincoln Highway Assn.

But the automotive industry remained a callow youth. It took World War I to put it on the road to maturity. From front-line ambulances to home-front freight carriers (that bailed out the supply lines when the railroads stalled), trucks pitched in to do a man's work.

Motor vehicles were now recognized as a potentially important industry. And, in the spirit of American free enterprise, manufacturers went to work to sell that since-proved promise of greatness.

One part of the selling job was the promotion of better roads. To list all the participants would be impossible. Such names as Firestone, Goodyear and Goodrich stand out. Illustrated at left is an early Trailmobile "We want good roads" caravan.

More recently, there was General Motors' nationwide essay contest, "How can we plan and pay for better highways?" It attracted response from such well-known names as Robert Moses, the outspoken critic of careless civic planning, and hundreds more.

It was such as this, plus National Highway Users Conference's "Project: Adequate Roads," that sparked the current highway expansion program.

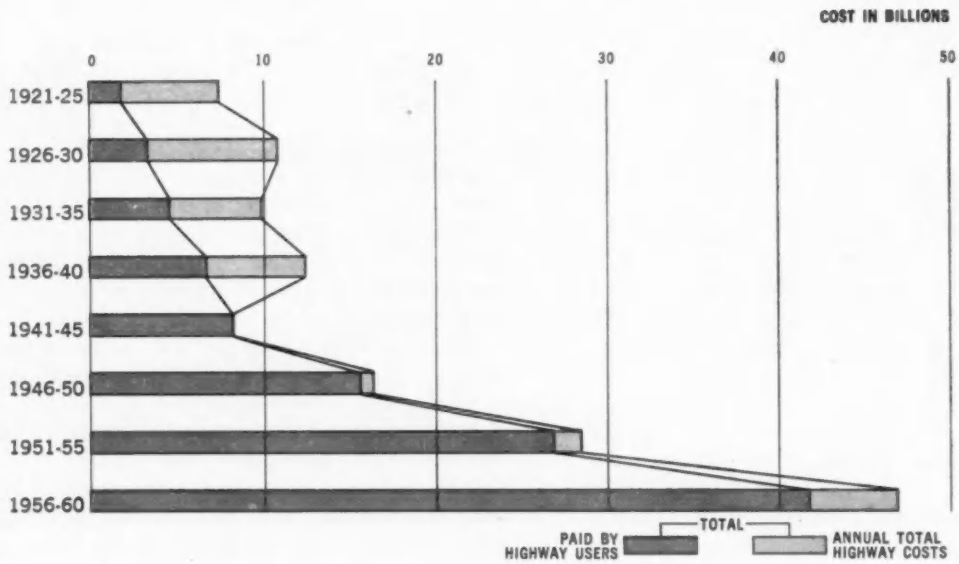
In the early 1900's, state and local governments held the highway purse strings. They did the highway planning, purchasing and maintaining. As vehicles improved and traveled further, the demand for coordination of routes between states put more and more planning and, indirectly, purchasing responsibility on the federal government.

In brief, the growth of the federal government's participation is marked by these milestones . . .

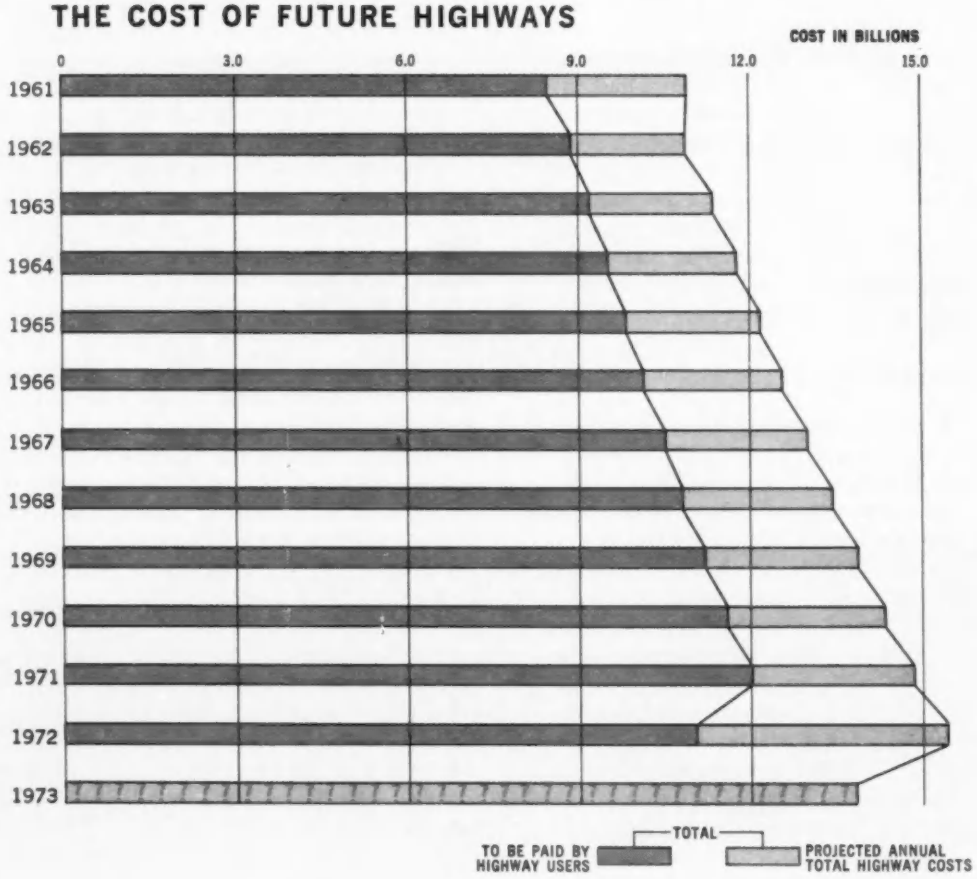
- 1893—United States Office of Road Inquiry is established. Its task being largely research and investigation into better roads.
- 1905—It becomes the Office of Public Roads, begins to consider what the federal government should do.
- 1916—First Federal-aid program passes Congress. It was a five-year, $75-million plan.
- 1918—It's now the Bureau of Public Roads and one of the greatest names in highway planning, Thomas H. MacDonald, steps in as chief.
- 1921—Federal-aid Primary Highway System is designated and 50-50 Federal-state financing begins.
- 1936—Federal-Aid Secondary Highway System is marked-out.
- 1944—The Interstate Highway System is authorized.
- 1956—The Interstate Highway System gets the go-ahead with $9 out of $10 of its cost to come from federal tax revenues.

Highways have to be paid for. The money comes from three pocketbooks—highway users, highway bene-

HIGHWAY COSTS AND WHO PAYS THEM



THE COST OF FUTURE HIGHWAYS



Today, highway users pay by far the biggest chunk of highway costs. Chart at top traces the history of this trend. In the beginning (1921-25) they paid about $1 out of every $4 spent. In the past five years (1955-60), they paid $9 out of every $10 spent! Lower chart, projecting future highway spending, shows users paying about $8 out of every $10 spent. But this is a conservative estimate. States are expected to follow Federal government's lead, look to highway users for construction, maintenance and administrative costs.

ficiaries and general taxpayers. Trend is for the user to pick up the biggest hunk of the tab.

Top chart at left shows what has happened. In actual figures, the users' share has gone from 25 per cent for the five-year period 1921-25 to 89 per cent in the years 1956-60. During the war years, 1941-45, user revenues exceeded the amount spent on highways!

Chart below, prepared especially for this issue by National Highway Users Conference, traces the share highway users will pay during the coming years. It comes to about $8 out of every $10 spent for highways. But it's based on today's taxes. Users will probably pay more as states look for dollars to match increasing federal funds.

Don't forget, federal funds are used only for building highways. In addition to matching these construction funds, states must cover the costs of highway maintenance, administration, research, highway police, safety, and interest on highway bonds. **The charts on this page include all such highway costs.**

Will other-than-user beneficiaries share more of the cost burden than at present? It's not likely. The federal government has set the pattern. Presently, all federal highway costs come from highway users.

Users may object to this principle. Many pages could be written on the question of "Who pays, how much for highways" The fact remains that the question is answered in the political arena of state legislatures and the halls of Congress. Public opinion bears as much weight in these as economic fact.

Nor are economic facts as clear as they should be. For example, Congress had to juggle the merits of four different cost-sharing theories in arriving at current federal highway-use taxes. For a 62,000-lb GCW combination, the share of federal costs suggested ranged from $1245 a year to almost three times as much—$3595!

The Highway Future

Beyond the "fair share" debate, there's little doubt of the need to improve and expand streets and highways. The forecast is for 1.2 trillion vehicle-miles of

The Subsidy Myth

Fleet operators burn as they see repeated time after time railroad charges that highway users are "subsidized." It's not true.

It stems from a characteristic of railroad operation. Railroads invest money in rights-of-way. Logically for them, such capital should bring a return. But, illogically, they ask that money "invested" in highways produce a similar "return" for the government!

Thus, railroads want highway users to not only pay for highways but also provide added revenue for non-highway governmental spending.

They would thus destroy an inherent advantage of fleet operation—the use of publicly-owned highways for which they pay heavily. The question of "fair share" will always be debated, but the "subsidy" charge has no validity.

New Interstate Highway System serves nation's major markets. Listed here are the 100 largest (from Printers' Ink Advertisers' Guide to Marketing for 1962) and the Interstate Route Nos. serving them.

Akron, Ohio — 71, 77, 80, 80S
Albany-Schenectady-Troy, N. Y.—87, 90
Albuquerque, N. M.—25, 40
Allentown - Bethlehem-Easton, Pa.—39
Atlanta, Ga.—16, 20, 75, 85
Bakersfield, Cal.—5
Baltimore, Md. — 70N, 83, 95
Beaumont - Port Arthur, Texas—10
Birmingham, Ala. — 20, 59, 65
Boston, Mass.—84, 89, 90, 93, 95
Bridgeport, Conn.—91, 95
Buffalo, N. Y.—90
Canton, Ohio—77, 80, 80S
Charleston, W. Va.—64, 77
Charlotte, N. C. — 77, 85
Chattanooga, Tenn.—24, 59, 75
Chicago, Ill.—55, 57, 65, 80, 90, 94, 96
Cincinnati, Ohio — 71, 74, 75
Cleveland, Ohio — 71, 77, 90
Columbia, S. C. — 20, 26
Columbus, Ohio—70, 71
Dallas, Texas—20, 30, 35E
Davenport, Iowa - Rock Island-Moline, Ill.—74, 80
Dayton, Ohio—70, 75
Denver, Colo.—25, 70, 80S
Des Moines, Iowa—35, 80
Detroit, Mich.—75, 94, 96
Duluth, Minn.-Superior, Wis.—35
El Paso, Texas—10, 25
Flint, Mich.—75
Fort Lauderdale - Hollywood, Fla.—95
Fort Worth, Texas—20, 35W
Fresno, Cal.—5
Gary-Hammond-East Chicago, Ind.—55, 57, 65, 80, 90, 94, 96
Grand Rapids, Mich.—96
Harrisburg, Pa. — 78, 80S, 81, 83
Hartford, Conn.—84, 91
Honolulu, Hawaii—H1, H2, H3
Houston, Texas—10, 45
Huntington, W. Va.-Ashland, Ky.—64
Indianapolis, Ind.—65, 69, 70, 74
Jacksonville, Fla. — 10, 95
Jersey City, N. J.—78, 80, 87, 95
Johnstown, Pa.—80S
Kansas City, Mo.—29, 35, 70
Knoxville, Tenn. — 40, 75, 81
Lancaster, Pa.—80S
Lansing, Mich.—96
Los Angeles-Long Beach, Cal.—5, 10, 15
Louisville, Ky.—64, 65, 71
Memphis, Tenn.—40, 55
Miami, Fla.—95
Milwaukee, Wis.—94
Minneapolis - St. Paul, Minn.—35, 94
Mobile, Ala.—10, 65
Nashville, Tenn. — 24, 40, 65
Newark, N. J.—78, 80, 87, 95
New Haven, Conn.—91, 95
New Orleans, La.—10, 55, 59
New York, N. Y.—78, 80, 87, 95
Norfolk-Portsmouth, Va.—64
Oklahoma City, Okla.—35, 40, 44
Omaha, Nebr.—29, 80
Orlando, Fla.—4
Paterson-Clifton-Passaic, N. J.—78, 80, 87, 95
Peoria, Ill.—74
Philadelphia, Pa.—80S, 95
Phoenix, Ariz.—10, 17
Pittsburgh, Pa.—70, 79, 80S
Portland, Ore.—5, 80N
Providence - Pawtucket, R. I.—95
Reading, Pa.—78, 80S
Richmond, Va.—64, 85, 95
Rochester, N. Y.—90
Sacramento, Cal. — 5E, 80
St. Louis, Mo.—44, 55, 64, 70
Salt Lake City, Utah—15, 80, 80N
San Antonio, Texas—10, 35, 37
San Bernardino - Riverside - Ontario, Cal.—10, 15
San Diego, Cal.—5, 8
San Francisco - Oakland, Cal.—5W, 80
San Jose, Cal.—5W, 80
Seattle, Wash.—5, 82, 90
Shreveport, La.—20
Spokane, Wash.—90
Springfield - Chicopee-Holyoke, Mass. — 90, 91
Syracuse, N. Y.—81, 90
Tacoma, Wash.—5, 82, 90
Tampa - St. Petersburg, Fla.—4, 75
Toledo, Ohio—75, 80
Trenton, N. J.—80S, 95
Tulsa, Okla.—44
Tucson, Ariz.—8, 10, 19
Utica-Rome, N. Y.—90
Washington, D. C.—66, 70S, 95
Wichita, Kan.—35, 35W
Wilkes-Barre - Hazelton, Pa.—80, 81, 84
Wilmington, Del.—95
Worcester, Mass. — 84, 90
Youngstown-Warren, Ohio 80, 80S

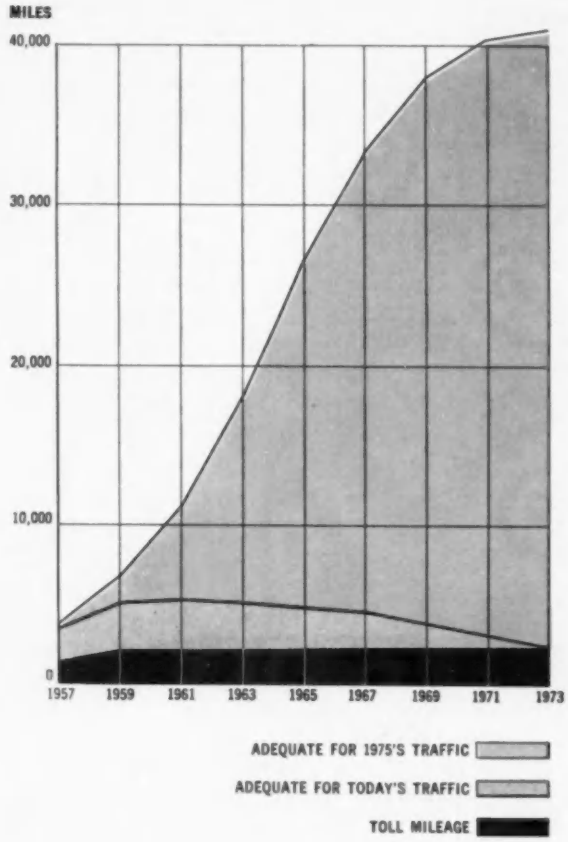
use by 1976—almost double that of 1956, when the current highway expansion program got underway.

Arthur C. Butler, National Highway Users Conference director, tells CCJ that, "Whereas, today there are some 70 million motor vehicles on our highways, there will be 100 million in 10 years. And instead of today's 84 million licensed drivers, we can look forward to having 120 million. By 1970, trucks are expected to increase by 150 billion the ton-miles they haul. And there will be some 45 per cent more trucks doing the job."

In addition to this increased highway demand, there is also the need to maintain and replace today's highways. Many of today's paved roads have a 20-year life. However, the current series of road tests—No. 1 in Maryland, the WASHO Test in Idaho and the AASHO Test in Illinois—give highway builders new pointers for building longer-life highways. But users will have to push for adequate highway maintenance and replacement. It deserves as much attention as vehicle maintenance and replacement . . . or else traffic rigor mortis will set in again.

Other highway questions demanding fleet operator attention in the years ahead include . . .

- Diversion. Almost a half-billion dollars of highway use taxes went for non-highway purposes in 1959. Don't forget the political fact: The greater the fund, the greater the pressure to raid it.
- Benefits. Bureau of Public Roads is reported as claiming $4 of benefit to users for every $1 spent on highways. Have new highways produced this much in your fleet operation? Ed Kiley, American Trucking Assns. research director, says fleets could be benefitted into bankruptcy by such thinking.
- City streets. Lined as they are with expensive real estate, it's not feasible to widen the right-of-way. Additional "moving traffic" capacity might come by banning **all** on-street parking.



The Interstate System

Big effort to get today's and tomorrow's traffic out of the muddle is the now-building Interstate Highway System. Map at left shows how these multi-lane, limited-access highways will crisscross the United States, creating new markets and expanding others—and, in the process, bring greater demand for intercity truck and bus service. Authorized in 1944, it didn't get the "green light" until 1956! Financing has been a problem, is likely to continue so. Also, as the chart shows, most of the 41,000 miles are yet to be built. Schedule calls for project to be finished by 1973.

• Highway quality. Fact is that poor construction has shown up in some stretches of the Interstate System.

• Highway progress. Chart above dramatically shows the distance yet to go before the Interstate System is complete and adequate for 1975's traffic. And there's still the question of how to finance the "freeing" of toll facilities incorporated in the System.

Who Blows the Whistle?

Use of these highways gives rise to regulation that both helps and limits highway use. The "rules fleets live by" affect traffic flow, driver qualifications, safety, vehicle equipment, sizes and weights, interstate reciprocity, insurance, rates, routes, financing, mergers and service.

Enforcing these rules are state and local police, state utility commissions, state highway departments, state revenue departments, the Interstate Commerce Commission and other governmental offices.

But harrassing as current regulations can be, things have been worse. Consider the now-repealed Texas law limiting payloads to 7000 lb—unless they were to be turned over to a railroad or unless there was no railroad service. If so, 14,000 lb could be carried!

Or consider Pennsylvania which clung to a 45,000-lb maximum gross halfway into the 1950's . . . and won't allow 40-ft semi-trailers until 1962!

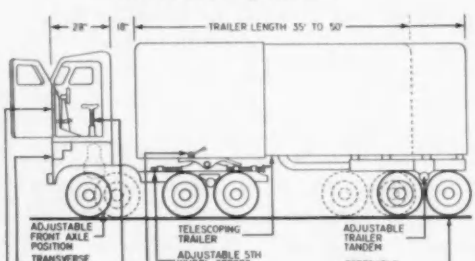
Look, too, at the Western Pro-Rata Registration Pact and the Southern States Agreement. They have breached at least some interstate barriers, replacing duplicated state taxation with multi-state reciprocity. In addition, many two-state, barrier-breaking agreements could be cited.

The Supreme Court decided early that regulation was legal. In 1915, it said (in the case of Hendrick vs State of Maryland), "In the absence of national

Biggest highway research project ever run off is the just-completed AASHO Road Test in Illinois. Yet-to-be-reported findings are expected to result in longer-life highway construction . . . and to provide facts for equitable sharing of costs among users.

Biggest barriers to free flow of interstate truck operation have been the varying state size and weight limits. In 1953, Mack Engineer Merrill Horine sketched this rig to illustrate the complexities of the problem.

Horine Special



Totally adjustable combination seems only way to comply with various limits

legislation covering the subject, a state may rightfully prescribe uniform regulations necessary for public safety and order, in respect to the operation upon its highways of all motor vehicles—those moving in interstate commerce as well as others. . . ."

And, for the next 27 years, the states proceeded to regulate truck movement—largely without regard for the free flow of interstate commerce. Even the Motor Carrier Act of 1935, putting interstate fleet operation under the Interstate Commerce Act, had little impact in this area.

By-and-large, state size and weight, tax and regulatory barriers grew until the advent of World War II. Main reason: The states held that highway regulation was their responsibility since they built the roads. It was politically inexpedient for Congress to upset the principle. But national defense pressure caused the states to yield to demands for easing of such interstate road blocks.

Sizes and Weights

The success of the wartime smoothing of interstate barriers lead directly to adoption by the American Assn. of State Highway Officials of a vehicle size and weight code in 1946. The AASHO Code is the backbone of today's size and weight regulation. It has been modified by regional considerations and liberalized by effective demand for more efficient vehicles.

Unfortunately, new barriers have been created as one state reaches ahead of another—or as others lag behind. Just eight years ago, Mack Engineer Merrill Horine sketched the rig below to illustrate some of the complexities of the problem.

But pressure is being brought to bear for more uniform regulation, at least on the new Interstate Highway System. AASHO is at present considering revision of its 1946 Code. Congress is to consider, next year, a federal size and weight policy. Users and makers—through American Trucking Assns. and Automobile Manufacturers Assn.—are working for practical limits.

Their goal, as expressed by AMA's Motor Truck Division Manager John H. King is "to bring order out of confusion in the standardization of truck sizes and weights . . . to gain a national size and weight code which recognizes the needs of the manufacturer, the user and the public."

Similar history could be related concerning other areas of regulation. Even as this is being written, ICC's Safety Regs are being revised, state legislative committees are considering motor code changes in 1962's law-making sessions, and the Assn. of Food & Drug Officials of the United States is promoting adoption by the states of its "zero" code for frozen foods transport.

In blueprinting the highway and regulatory future, fleet operators should plan for needed highways, reasonable taxes, fair and flexible regulation. To make such planning effective, they will have to have public opinion on their side. Final decisions are made in politically-sensitive legislatures.

FOLIO FOR PROGRESS

#4

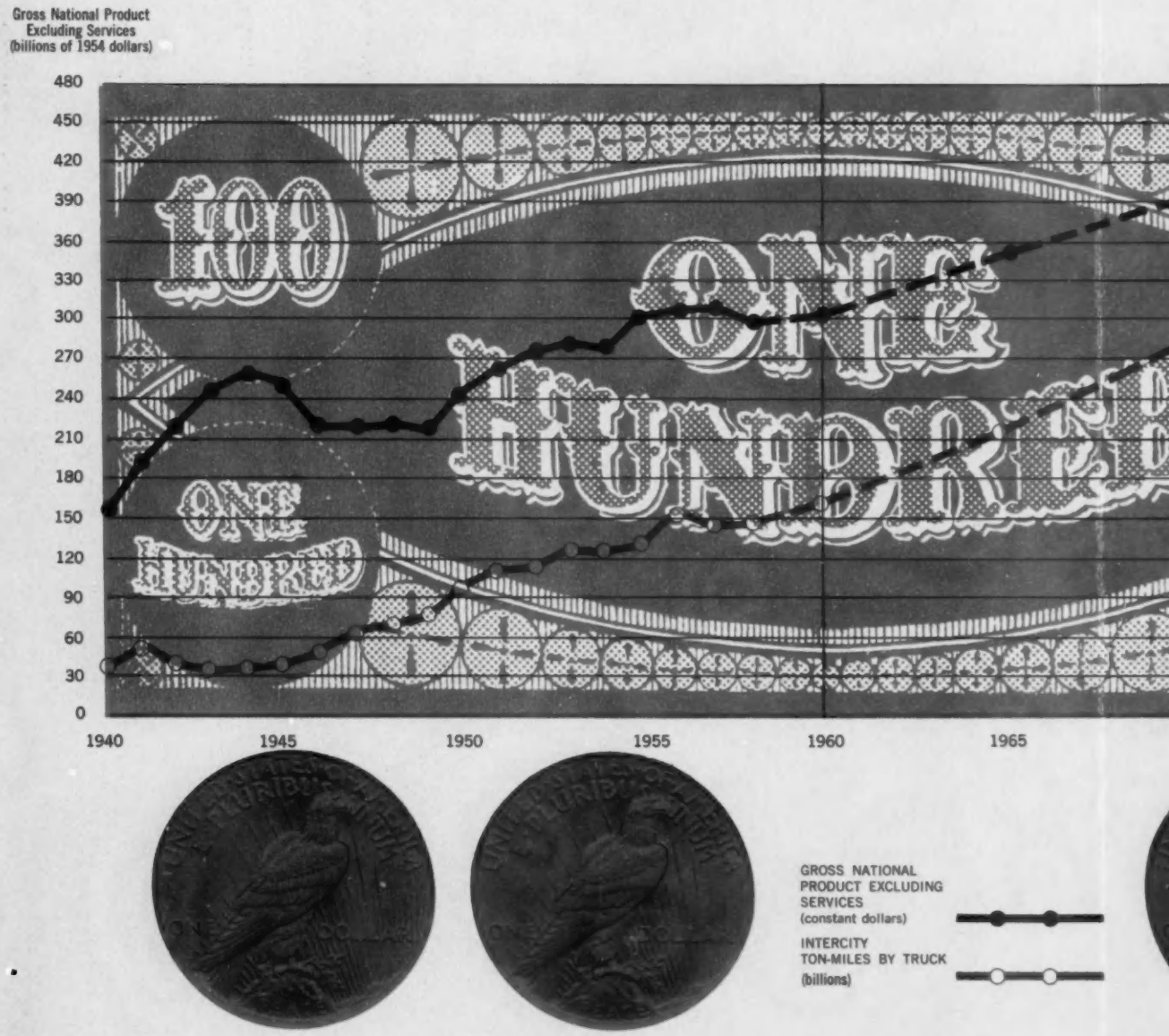
Highway Transportation And The National Economy

COMMERCIAL CAR JOURNAL

A CHILTON PUBLICATION

56th and Chestnut Streets, Philadelphia 39, Pa.

HIGHWAY TRANSPORTATION AND THE NATIONAL ECONOMY



National economic growth is generally accepted as a basic contributing factor in predictions of future demand for truck service. But it takes some calculation to bring the relationship between truck use and the nation's general economy into sharp focus.

Economic growth and the climb in the volume of intercity truck traffic are charted below. Relationship between the two indicators is shown separately on the reverse side.

Only that portion of the Gross National Product (GNP) which is significant to transportation needs has been used. The complete GNP represents total national output of goods and services at market prices. But Services such as medical and dental care, haircuts, entertainment, appliance repairs,

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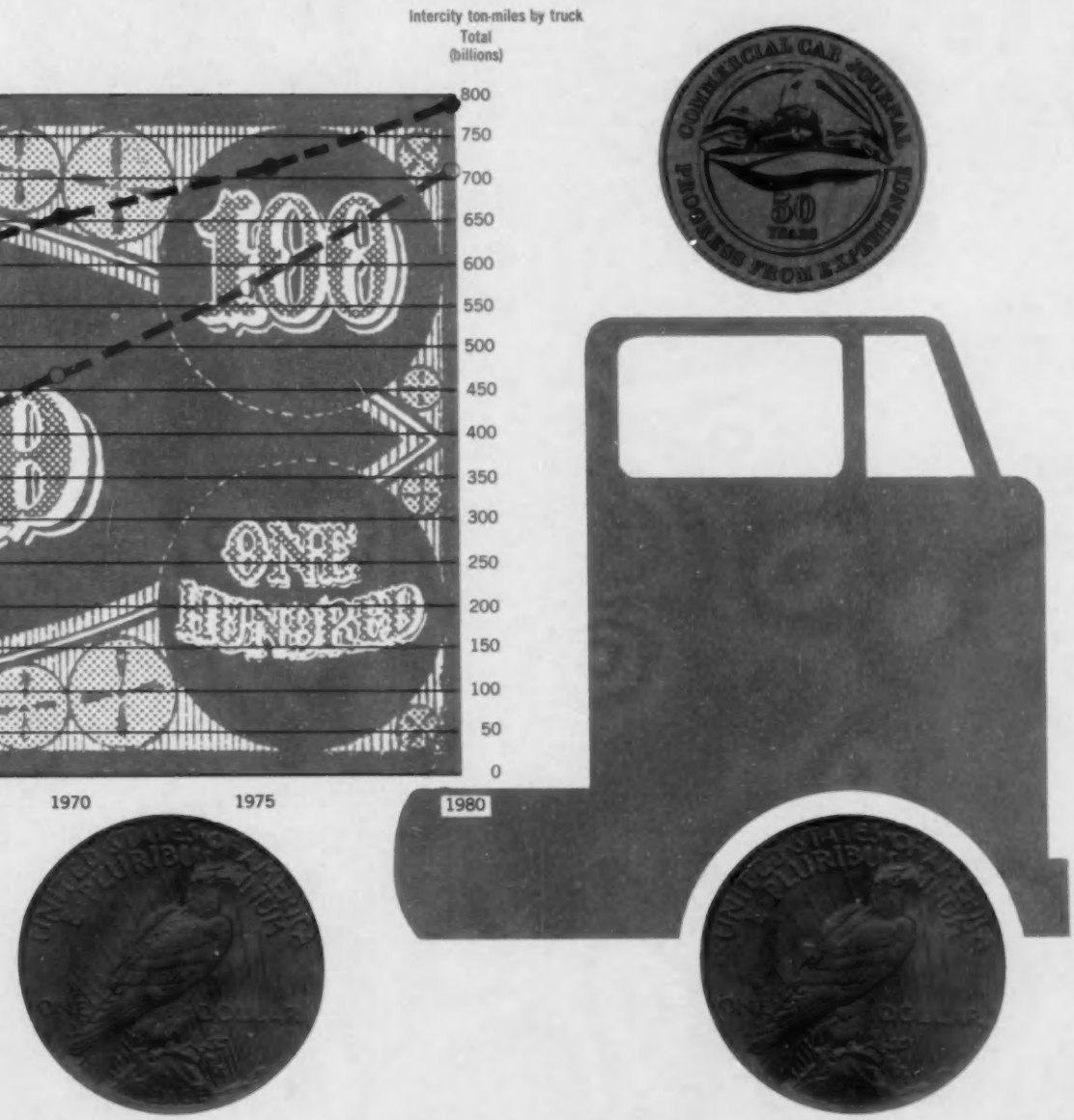
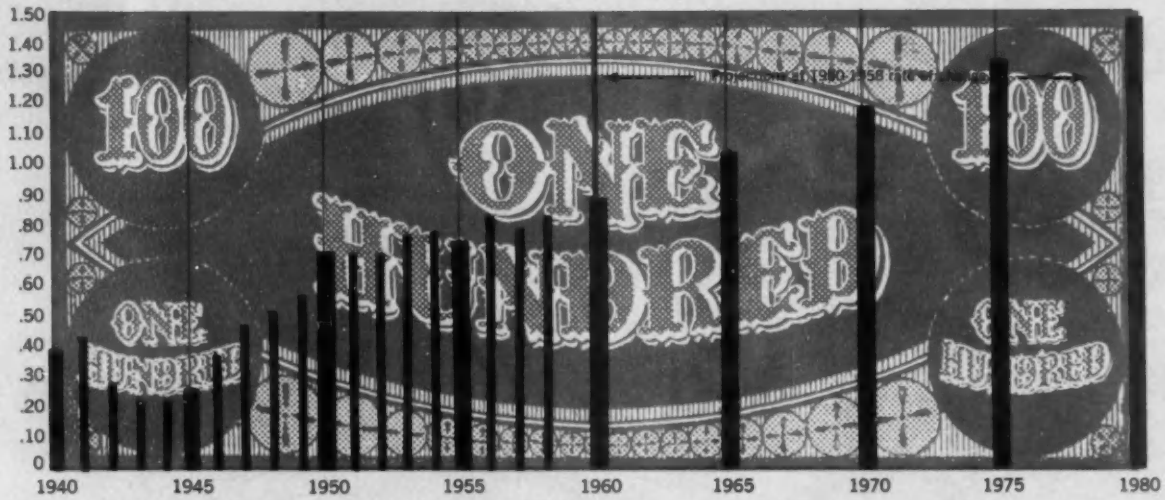


INTERCITY TON-MILES PER DOLLAR OF GNP



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and even transportation itself do not generate cargo traffic. And since these services account for about 40 cents of each dollar spent by consumers, they are a significant part of the economy. Since they have no bearing on potential traffic, however, the expenditures for Services were excluded for these charts.

The projection to 1980 of this "adjusted" GNP was made on the basis of year-to-year change for the period 1950-1958. All amounts are constant (1954) dollars.

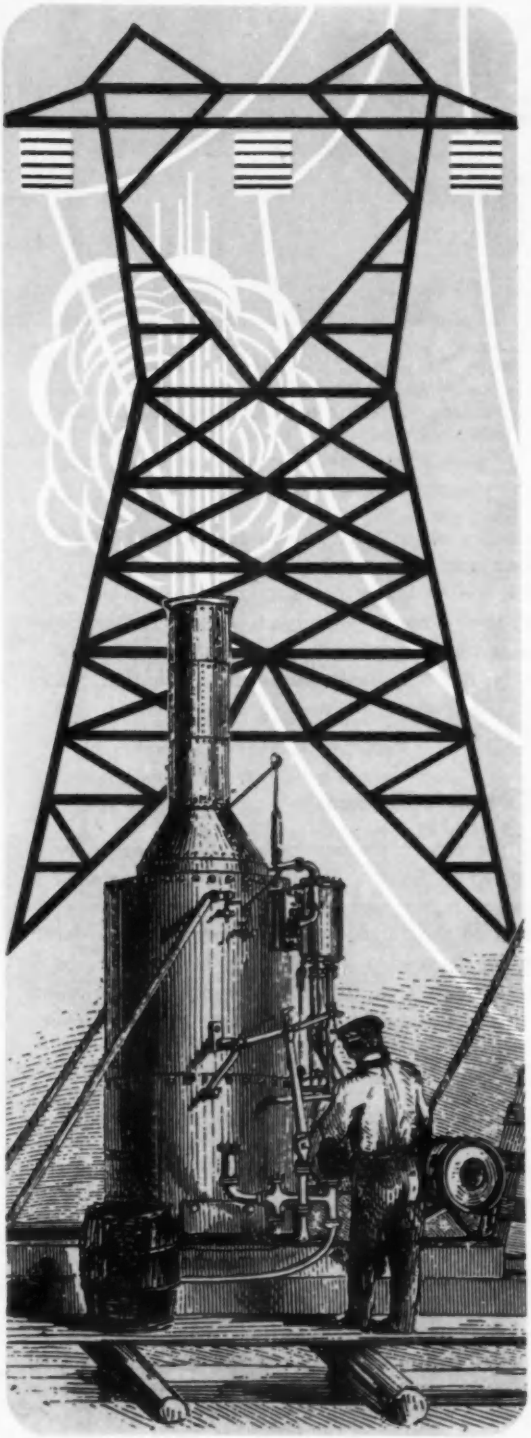
Projection of intercity ton-miles was calculated from the 1950-1958 pattern of the relationship between truck traffic and the "adjusted" GNP.

As shown in the chart above, intercity truck traffic per dollar of GNP (excluding Services) climbed from .71 ton-miles in 1950 to .83 in 1958. Increase was at the rate of .03 ton-miles per dollar per year. This rate of increase was used to determine a ratio for each year of the projection. The projection of the "adjusted" GNP for these years was then multiplied by this ratio to arrive at the traffic forecast.

Data on which the graphs were based is shown in the accompanying table.

Year	Gross National Product Excluding Services (Billions of 1954 dollars)	Intercity ton-miles by truck	
		Total (in millions)	Per dollar of adjusted G N P
1940	156.7	62,043	.39
1941	187.0	81,363	.43
1942	214.3	59,896	.27
1943	241.5	56,784	.23
1944	260.3	58,264	.22
1945	253.8	66,948	.26
1946	217.2	81,992	.37
1947	215.3	102,095	.47
1948	223.5	116,045	.51
1949	221.0	126,636	.57
1950	242.6	172,860	.71
1951	263.6	188,012	.71
1952	272.7	194,607	.71
1953	285.3	217,163	.76
1954	276.8	214,626	.77
1955	301.7	226,188	.74
1956	304.9	253,751	.83
1957	308.5	244,895	.79
1958	295.2	246,984	.83
	1	2	1
1960	311.6	277,324	.89
1965	352.6	366,704	1.04
1970	393.6	468,384	1.19
1975	434.6	582,364	1.34
1980	475.6	708,644	1.49

1—Projections are at 1950—1958 average rate of change
2—Projection is product of projected G N P and intercity ton-miles per dollar



In 50 years the motor truck remade America. It alone can supply expanding cities, remote farms, decentralized industry and rising consumer demand. In the bargain we discover . . . .

most truck tonnage was NEVER on rails

■ Before the gasoline engine there was steam. Before trucks there were railroads. During the 1800's, the steam engine, the railroads and later electric power changed the face of America. Together they freed industry from "the old mill stream," provided the transportation that made the inland cities possible, and pushed the nation's frontier from the Appalachian Mountains to the Pacific.

In the past 50 years the motor truck has changed the face of America all over again. A population map of 1910 shows the nation living in cities, towns and the farmlands which supplied them, stretched out along the railroad rights of way.

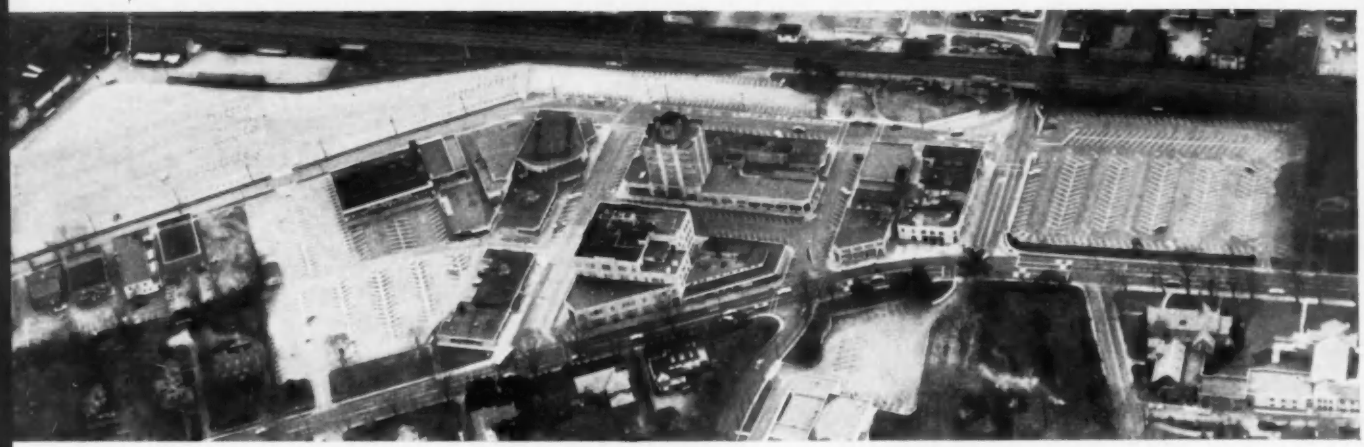
Today's map is very different. For, while the population has more than doubled, most of the big cities have grown only a little. In the process, total railroad mileage has **shrunk.**

It was the truck that pushed the frontiers in new directions—not often further out—but filling the great voids between and beyond the rail line.

In earlier chapters we followed development of commercial vehicles themselves, the fleets that used them, and the highways they shared. Now the task is to examine the why's and wherefore's that made highway transportation so vital to America.

Along the way we will uncover two great fallacies. First is the often heard wish that there were no trucks at all. Second, the popular myth that trucks are to blame for all of the railroads' woes.

Already established is the basic fact that rails cannot serve a community where there are no rails. Today there are many thousand such communities. Most are new since the last rail lines were built. But a great many have been **abandoned** by the rails in a mammoth cut back of the service offered. In some



Suburban Square in Ardmore, Pa., (near Philadelphia) was nation's first shopping center. Three buildings in center formed nucleus—Strawbridge & Clothier department store, office building and theater. Essential ingredient: big parking lots.

cases the tracks are gone altogether . . . in more, the depots have been closed as the through trains highball by.

Add the fact that perhaps half of all truck tonnage is local—fulfilling the cities' internal needs or supplementing other forms of transportation—and it becomes abundantly clear that most truck tonnage was never on the rails!

The Cities Move Out

It's hard to fix the exact sequence that brought a new face to America. Probably the first big step was the cities pushing out. The exodus to the suburbs started even before the truck. Well-to-do New Yorkers built homes in Long Island, in West Chester County and northern New Jersey. From Philadelphia the migration went toward Germantown, Chestnut Hill and then the Main Line. In Chicago they pushed north along the lake and west along the rails.

That was the one thing they all had in common—commuter rail service. The suburbs were strictly parasitic. The railroads not only took the suburbanites to work in the city, they also brought the housewives in for all their shopping needs. Package deliveries would drop bacon and kippered herring at depots along the way.

Suddenly it was 1928, less than a decade after the big pneumatic tires gave trucks their true mobility. That was the year a group of real estate men in Ardmore, Pa., eight miles from the center of Philadelphia, had a really startling idea. They purchased a 20-acre estate and built the nation's first suburban shopping center. As luck would have it, the great depression broke just as it opened and its success hung in the balance for nearly ten years more. But in the end it was, indeed, a success, and thousands of similar centers have since opened across the country.

Now it was no longer necessary to go to the city to buy day-to-day needs—even such rock-bound necessities as furniture, appliances or the millions of items stocked by the big department stores. Suburbia had become a self-contained reality, made possible and stocked entirely by truck.

The Farmer's Dilemma

While the cities were pushing out, two things were happening to the farmer. Displaced through the simple economics of higher land value and taxes, he was moving farther to the "hinterland." At the same time he was pushing in toward the city with the products of his soil. Obviously, the demand was more, the prices higher in the city market. So he started hauling produce and poultry to town. Much of this is still transported on relatively short hauls by the farmer himself or his agent.

Milk and livestock were something else again. The hauls got longer much faster by another law of economics. To raise cattle and beef at a profit you had to be big—out on the plains and open spaces. At the same time, these products required special vehicles—the tanker and the ventilated van. These were designed by body and trailer builders; became tools of the fleet operator. Gradually they took over the job of supplying the city from longer and longer distances. Nobody ordered them to do so. Nobody said they could or couldn't. They simply did the job better than any other form of transportation.

So today they supply better than 75 per cent of all the city needs in these categories. Now it is not usual to be in Philadelphia and spot inbound milk

tankers from Wisconsin. Even Anchorage gets fresh milk by truck from Minnesota. And the sound of sheep and cattle is a familiar one at the rural roadside, anywhere, U. S. A.

Industry on the Move

As the city folks pushed out and farmers pushed in, industry became restless.

When, as noted earlier, steam and electric power freed the industrial plants from immediate water power facilities, the plants first gravitated by and large to the big city areas. The reason: It was cheaper to bring the raw materials in and have the plant near the market for its finished products.

But it wasn't long before industry exploded far beyond the market potential of a single city or area. Hat factories in Danbury, Conn., were selling hats not only in Danbury and New York but in Chicago and Los Angeles as well. Shreaded Wheat, made in Niagra Falls, was sold across the country. Thus, a plant location within a city boundary was no longer an asset. Taxes were higher, congestion acute, and with the automobile labor could follow the plant.

So by the thousands, industrial plants moved away from city locations to smaller communities. Some settled on the fringe of the big cities, some in what once were remote areas. The industrial plants in Solon, Ohio (near Cleveland), or Valley Forge, Pa. (near Philadelphia), are modern examples of fringe area development. So are the 215 plants along Route 128 which almost encircles Boston (a few are shown on map). Truck transportation puts them in direct touch not only with neighboring cities but also with cities hundreds of miles away.

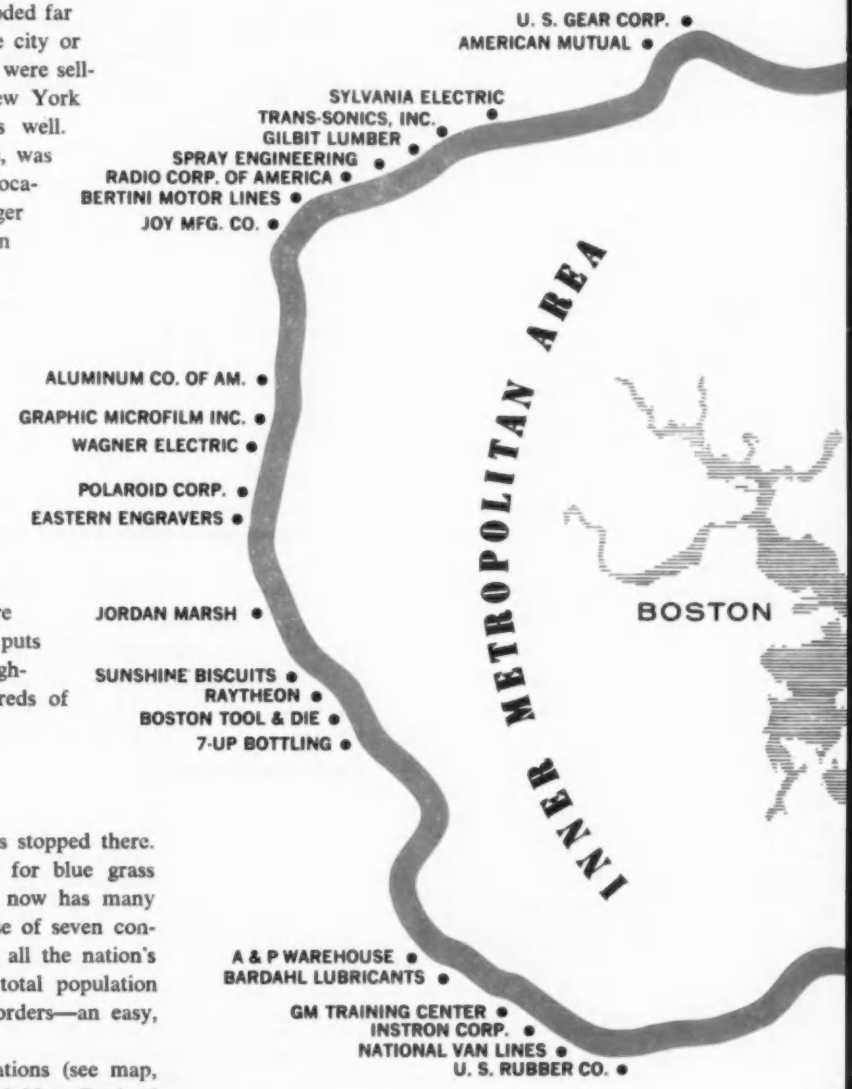
Further and Further Out

But neither the plants nor the trucks stopped there. The state of Kentucky, once famous for blue grass and horses, Colonels and mint juleps, now has many industries. Within its borders and those of seven contiguous states live almost a quarter of all the nation's people (22.4 per cent). Half of the total population lies within 400 miles of Kentucky's borders—an easy, economical run for the motor truck.

Industry also moved by whole vocations (see map, page 159). The textile mills in crowded New England found new homes in the Carolinas. The airplane industry, once with a strong foothold in the mid-West moved West and South, following sunnier skies to California and Texas. Just recently there's been a great boom of electronics manufacturing in the Tucson-Phoenix area. And there's no way of telling where

ROUTE 128

Six and sometimes eight lanes wide, Route 128 around Boston typifies the enigma of modern roads. Built to circumvent big-time metropolitan traffic, it created much new traffic along the way . . . specifically 215 plants or sales offices.



or when a major move by the military may crop up with whole new communities . . . as they did at Oak Ridge, Los Alamos, Cape Canaveral or Vandenberg.

Along the way, something else happened within industry itself—the growth of the corporation giants. You might expect the automotive empires to have plants numbering in the hundreds. But a company like U. S. Steel is usually associated with Pittsburgh. A recent inventory gives it 88 plants across the country. DuPont has 79, Dow Chemical 50 and Eaton Manufacturing 37.

Many of these intra-corporation plants have a heavy flow of movement between them, both in raw supplies and in semi-finished and finished products.

And all of them depend on mountains of suppliers: General Motors has 30,000; Chrysler has 12,000; Ford has 8000.

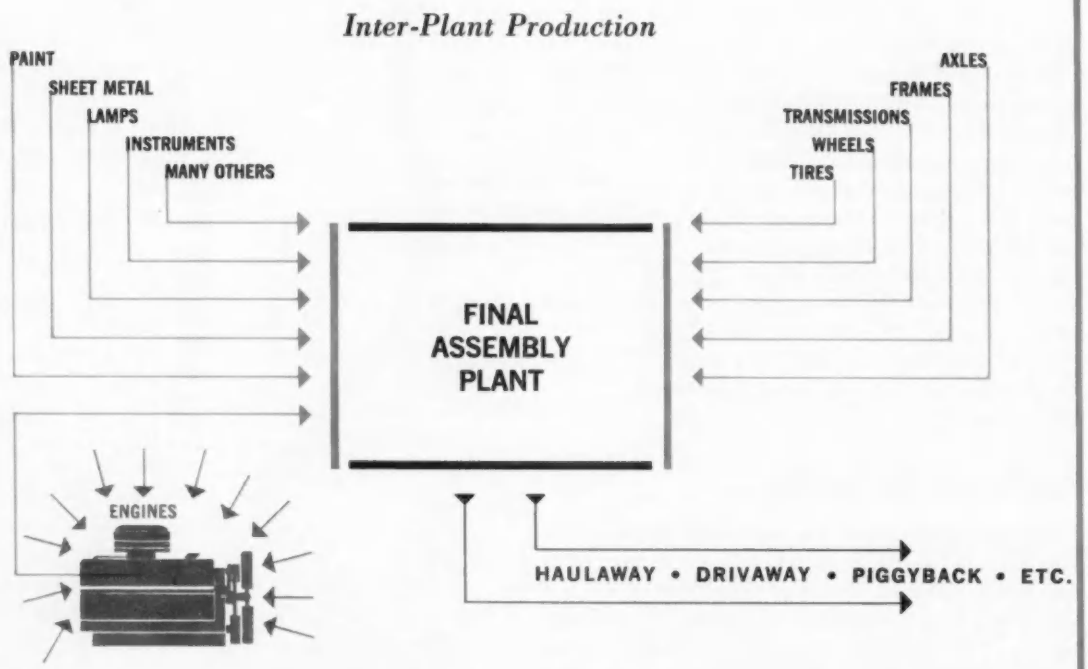
The truck has become a genuine part of industry's production line—both internal and external. Take the very magazine you are reading now.

Trucks bring it paper from New York and Virginia and part way from Wisconsin. Trucks bring it ink from northern New Jersey and type lead from nearby sources. Then on the end of the production line trucks take it to the Post Office in Philadelphia, and trucks bring it to your door.

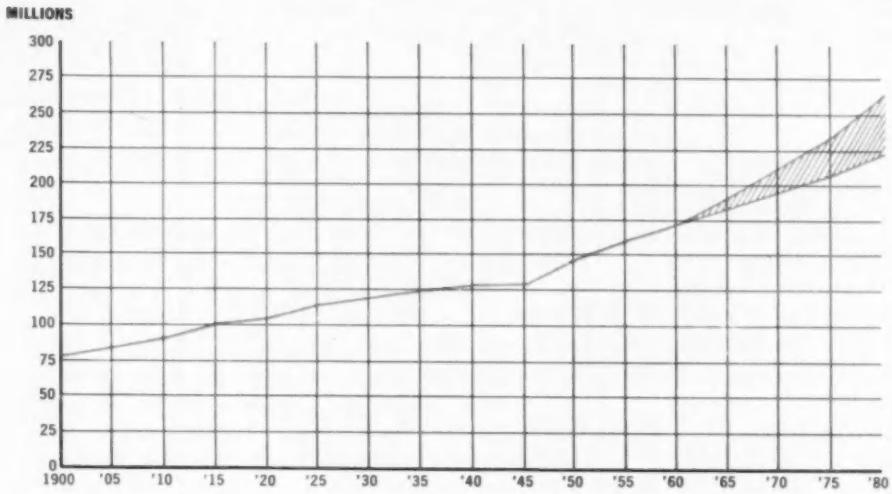
Speed of Delivery

We've talked much about the moves of industry and new plant locations. True enough, many of these new plants have been located adjacent to railroads and do considerable transport business with them.

But therein lies another important facet of trucking —speed of delivery. Not speed on the highway but speed of shipment door-to-door. Two examples will



An automobile assembly plant looks innocent enough in Highland Park, Mich. or Metuchen, N. J. But it's life-line of supply extends halfway across the country. Not only do trucks handle most of the traffic charted here; they also bring mountains of material to and from the manufacturing plants as well. It is estimated that General Motors has a total of 30,000 suppliers; Chrysler 12,000; Ford, 8000. And last but not least is the final delivery—all or part way by truck.



POPULATION

Bureau of Census keeps a running tab on population growth. But mere numbers tell only a small part of the story in terms of transportation needs. Demand per person goes up even faster (see Folio No. 5, "A Nation on the Move"). Looking ahead, Census insists on alternate predictions, hence the fan-shaped projection.

illustrate the point. Two months ago COMMERCIAL CAR JOURNAL reported these facts about "Life" magazine. R. R. Donnelley's new "Lakeside Press" in Old Saybrook, Conn., prints 900,000 copies a week. But only 120,000 copies go out by rail. The other 780,000 roll by truck, simply because the rails cannot meet "Life's" exacting delivery schedules.

Four years ago COMMERCIAL CAR JOURNAL reported this fact about a major petroleum refiner. It had a railroad siding at the refinery near Philadelphia and another siding at the Detroit warehouse. Typical railroad delivery, even in carload lots, between the plants was ten days to two weeks. By shifting to common carrier truck the refinery got second morning delivery in Detroit, and delivery could even be tied to a specific hour that shipment could be expected. Result: The refinery was able to reduce inventory by $100,000 at the warehouse freeing that capital for other business needs.

Seldom if ever do the trucks haul at a cheaper price. Yet this is another of the popular myths. Excluding water, air and pipelines, the average shipper has three choices. He can ship by rail, by common or contract carrier truck, or by his own trucks. The choice is up to him. He picks the one that will bring him the best **total** economy. In both cases cited above—"Life" magazine and the refinery—they could have made their shipments considerably cheaper by rail. But they didn't because the total economy dictated the faster mode of transportation.

Population and New Demands

Up to now we have discussed largely the shifts in living habits and the new industrial revolution that trucks made possible. Of course, there are other influencing factors. One of them is the population—the pure and simple rising curve of a nation growing (see chart). Our 180 million people today need at least twice as many goods as the 76 million people of 1900.

But the story doesn't stop there. For actually they need many times that number of goods. In 1900 there were few telephones, no radios, no TV's, no electric refrigerators, no dishwashers, no home laundries, no air conditioning, no manufactured swimming pools. There were few canned foods and no frozen commodities. These are symbolic of our rising standard of living and they spell out more than anything else the rise in truck transportation tonnage to match it.

The automobile itself has generated a fantastic number of ton-miles. It has been estimated that at least 1000 ton-miles are involved in the pipeline of production for a single two-ton car. Then if the finished car travels an average of only 200 miles to final delivery, that adds 400 ton-miles more.

It takes a heap of transportation to keep our modern standards rolling. The whole picture is dramatically illustrated in Folio No. 5—A Nation on the Move. It shows the tremendous growth **per person** in transportation needed, even if there was no growth in population at all. When you combine the population and the demand, then project it to the future you get one of the most challenging of all the influencing factors. In fact only one surpassed it. It was . . .

The Men of Action

Through all their 60 years the trucks had one more weapon the railroads forgot to reckon with. From the ivory towers of their well-entrenched monopoly it was all too easy for railroad executives to watch the sputterings of the horseless wagon with amusement,

then wonder. There was a second and third generation of railroaders in power by the early 1900's. They were well removed from the pioneering that drove the golden spike. They had forgotten what men of action could do.

But the truckers **were** men of action, maturing, as we have seen, from two distinct family trees. One man had products to move, had to decide whether to ship it via the best possible route or take it to market himself. If he chose the latter he became a private truck operator. The other man "had truck, would travel," became a "for-hire" carrier.

In the early days both shared the common problems of rickety vehicles, "impossible" roads. Later they both shared the thousand and one problems of fleet management . . . individually and collectively. In addition, the "for-hire" carrier had to have loads. They weren't hanging by the roadside for pickup. He had to sell his service.

And sell it he did, as the record proves. Seldom was his price lower than other forms of transportation. But without exception his service was better.

As trucking grew, so did its men of action. They had to. For as the internal problems of fleet operation came closer to solution, the external problems grew bigger. Most notable: The mountains of restrictive and harassing legislation imposed in the hurly-burly, helter-skelter maze of state and Federal laws.

How well they have succeeded and what challenges the future holds is the subject of the next and final chapter. Meanwhile, a final "factor" in trucking growth needs a more careful look.

"Supermetropolis," U. S. A.

When the cities pushed out, as noted before, they didn't stop at the suburbs. They pushed on deep in the farmlands and timber. They ran to and beyond their adjacent towns. As they did so the big cities came closer and closer to each other.

So today you hear more and more talk about the "supermetropolis." Some rough outlines of them are outlined on the map (lower right). Interestingly, the Bureau of Census as of mid-1961 refuses to speculate on their specifics—except one. It is the Boston, New York, Philadelphia, Baltimore, Washington complex. Here Census is very specific—indicates a population now of 31.5 million, or 17.5 per cent of the nation's total.

The supermetropolis is outlined neither with a straight line nor a uniform shape. Rather it has fingers. Included in the Boston-Washington area, for instance, are New Bedford and Worcester, Mass.; Providence, R. I., and a big sweep through Hartford, Meriden, New Britain and Waterbury, Conn.

Then the super city sweeps down the coast through New Haven, Bridgeport, Norwalk, Stamford, and metropolitan New York. The New Jersey segment includes Jersey City, Newark, Paterson, Clifton, Passaic, and on to Trenton. A huge finger extends out to Allentown, Bethlehem, Easton, Harrisburg, Lancaster, Reading and York, all in Pennsylvania. Finally it swings back to Philadelphia, Wilmington, Baltimore, and Washington.

Other potential complexes include:

- The Pittsburgh, Cleveland, Toledo and Detroit area.
- Another extends downward from Toledo to Dayton and Cincinnati.
- A huge one is building between Milwaukee and Chicago to Peoria and St. Louis.
- In the northwest—Seattle-Tacoma and Portland-Salem are almost an accomplished fact.
- In California there is the San Francisco, Sacramento, Oakland complexes in the North; the Los Angeles to San Diego pattern in the South; with a possible connecting finger between the two through Fresno.
- The Dallas-Fort Worth area already exists in Texas with separate fingers pointing toward San Antonio and Galveston.
- In the southeast the Knoxville, Chattanooga, Birmingham area is obvious. Close behind is the Durham, Greensboro, Charlotte, Atlanta complex.
- And in Florida, the Jacksonville-Miami build-up already exists with a finger extending through Orlando to Tampa, Sarasota, and Fort Myers.

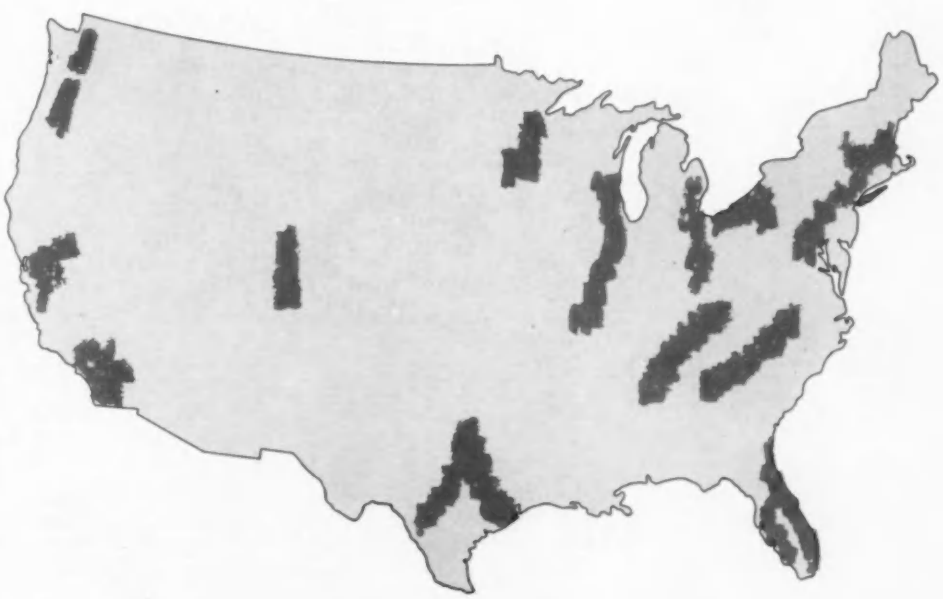
What is happening and what will happen to transportation within these super metropolitan areas? The answer appears quite obvious. As the cities merge into one giant mass, transportation becomes almost a local function. Today shippers would not think of putting anything but the bulkiest of commodities on a train between New York and New Brunswick or between Philadelphia and Trenton. Tomorrow, with the trend already here, the Boston-Washington complex will be just as local. Except, perhaps, for the relatively few commodities that originate at one end and are consigned to the other end.

The really big question is who will move the freight from one super city to another? No one is ready to capitulate. The probable answer: All forms of transportation . . . at least within present horizons.

Changing Patterns in U. S. Population

INDUSTRY ON THE MOVE (above) keeps America on the go. Textiles from New England to the upper south, airplanes from the midwest to far west, automobiles from the plain states to Detroit . . . all furnish new traffic that only the truck can handle, door-to-door.

CITIES ON THE MOVE (below) grow closer together, envelope surrounding farmland or timber to form contiguous "supermetropolis." Only a few are plotted. Biggest is Boston—New York—Washington complex. Tomorrow's "local haul" may reach 200 miles.



And that's a good point to take a look at . . .

Rail-Truck Status Today

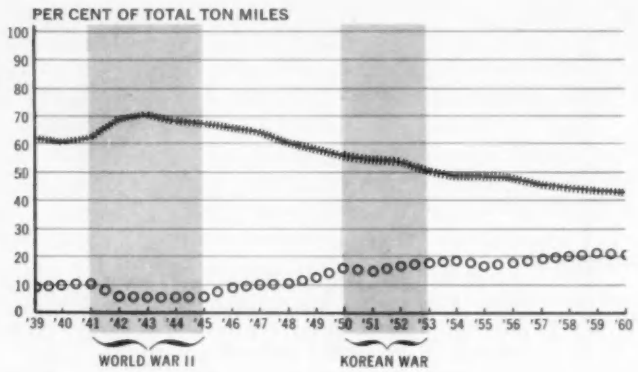
The battleground for **strictly intercity** freight-ton miles has been more obscured by fog, misrepresentation, and misunderstanding than any tactical front in modern history. Ninety per cent of the confusion comes from two areas, both obvious: Total tonnage vs ton-miles and **per cent of total** vs actual total.

Yet the facts are clear and the figures available direct from the Interstate Commerce Commission. Rail and truck ton-mile performance for the past 20 years are charted below. Both are on a common base. No years have been omitted. Several deductions are at once obvious.

- Today the rails still haul just about twice as many ton-miles as the trucks.
- The truck ton-miles have been increasing at a much faster rate than rail ton-miles.
- But, allowing for peaks and valleys, especially in the war years, railroad ton-miles are also up. Though the growth factor is slight, their dilemma is far from what the nation is often led to believe.
- Quite apparent, and amplified by Folio No. 3 "The Boom Between Cities," truck performance will continue to make further inroads in the years ahead.

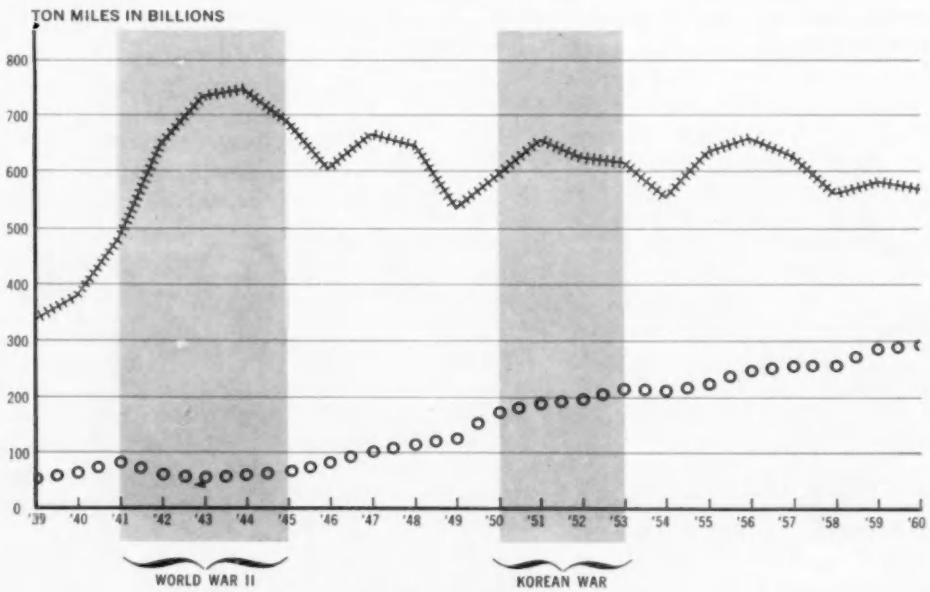
More details begin on page 165.

PER CENT of intercity ton-miles hauled shows the railroads fighting a losing battle. But they still get the lion's share. Percentages hauled by other modes of transportation (in 1959) include: Inland waterways, 15.2; pipelines, 17.5; airways, .05.



RAILWAYS

MOTOR VEHICLES



RAILWAYS

MOTOR VEHICLES

TOTAL TON-MILES, however, shows a very different picture. While truck tonnage continues to climb steadily, rails still haul nearly twice as much. Situation is not nearly as bad as some contend. Source: Interstate Commerce Commission.

FOLIO FOR PROGRESS

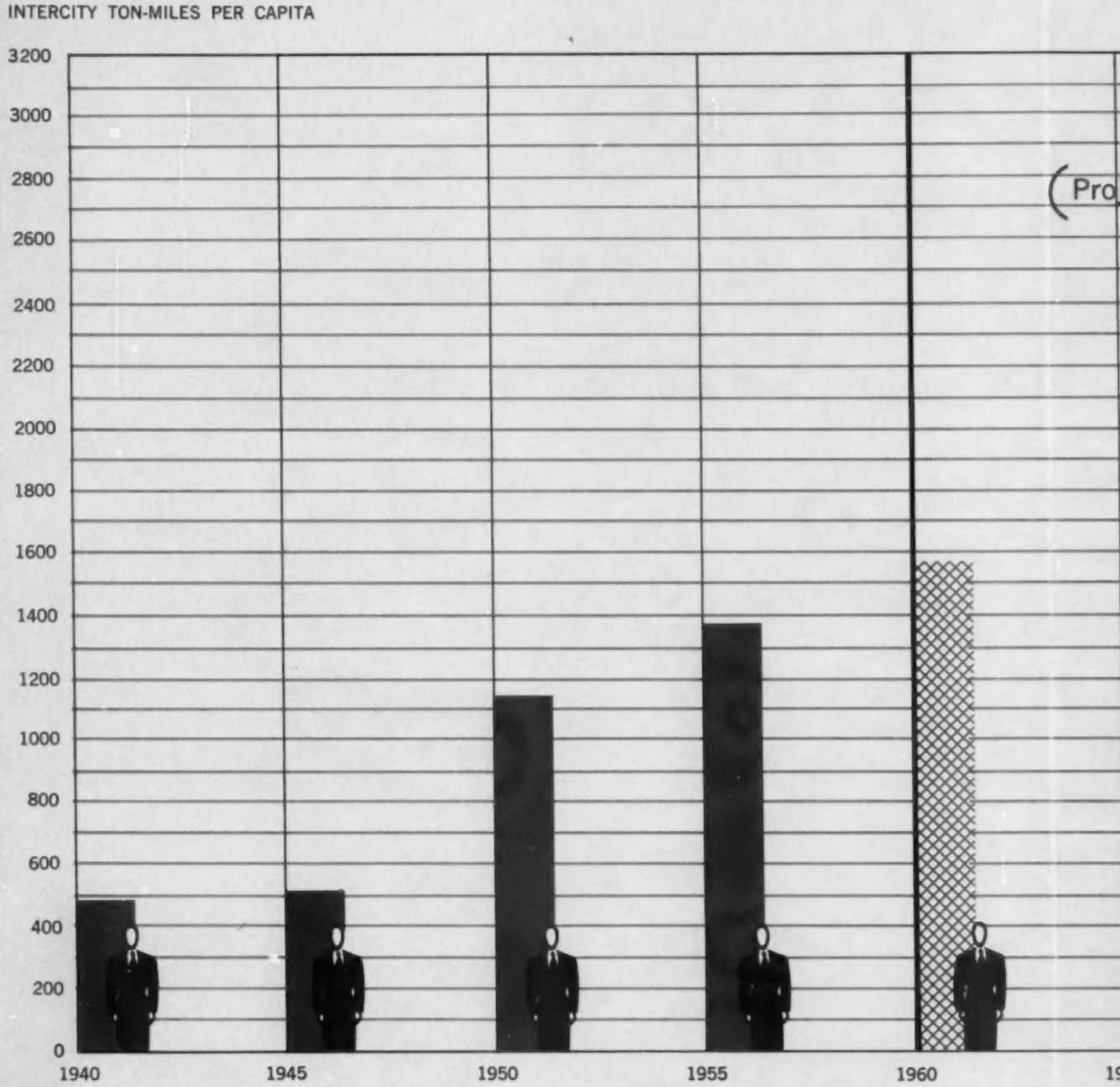
#5

A Nation On The Move

COMMERCIAL CAR JOURNAL
A CHILTON PUBLICATION
56th and Chestnut Streets, Philadelphia 39, Pa.

A NATION ON THE MOVE

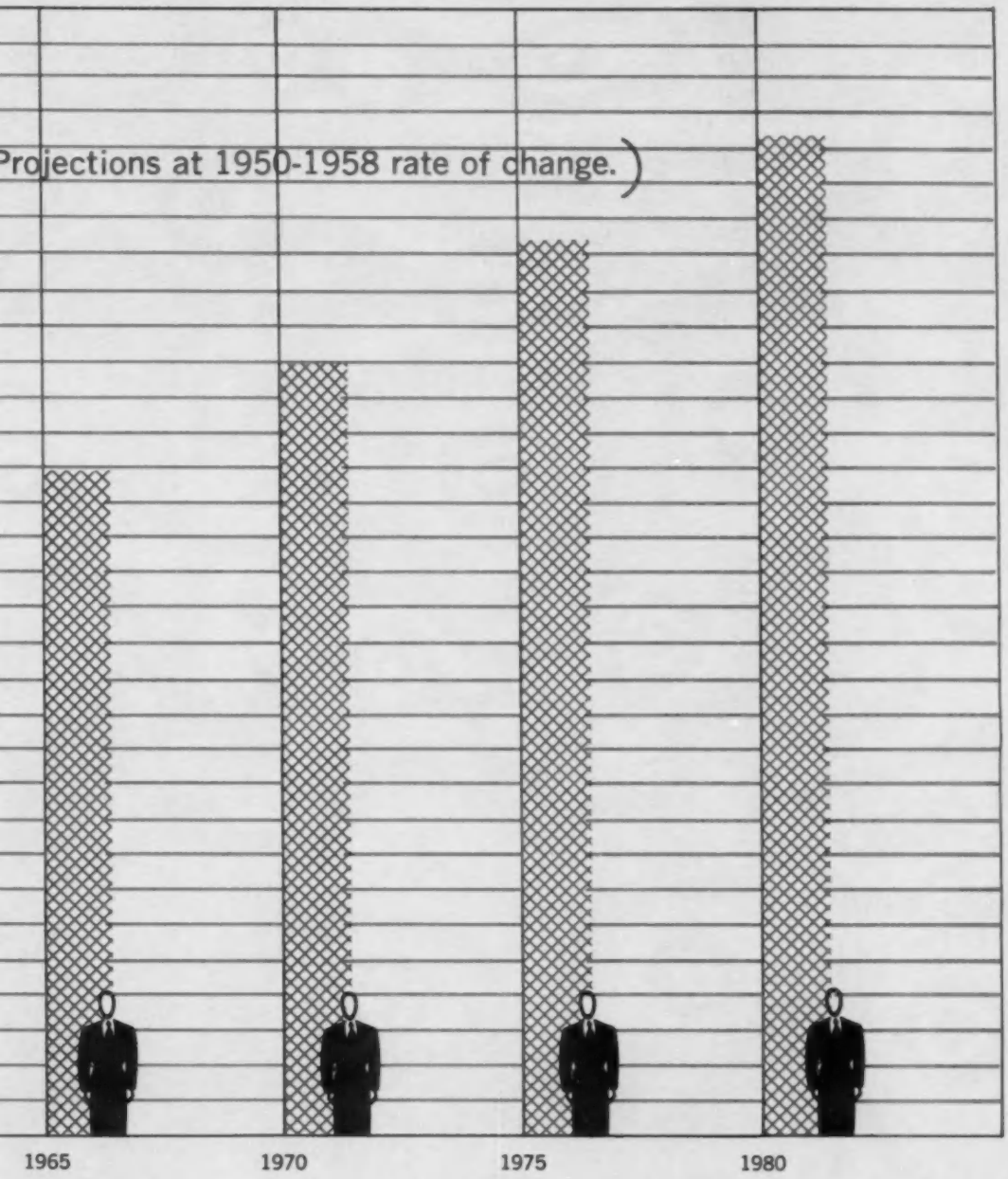
MORE TRUCK SERVICE FOR EVERY AMER



Tell a man that trucks handled more than 162 billion ton-miles of intercity freight in 1958 and he'll act suitably impressed. Tell him that in 1955 trucks did a job equivalent to moving 1377 tons of cargo one mile for each man, woman and child in the nation, and he'll come closer to appreciating what truck service means to an individual. Tell him that by 1980, at current rates, this service will nearly double . . . to more than 2800 tons per mile and he'll grasp the real potential of truck transportation.

That's the story told in the bar charts above. Note that the little man

MERICAN



(representing each man, woman and child at the time indicated) remains unchanged. But the freight that trucks haul for him moves up rapidly.

The ton mileage data comes from Interstate Commerce Commission reports. Resident population (excluding armed forces overseas) is from Department of Commerce estimates. Projections beyond 1958 are based on 1950-1958 rate of change.

Base data for the graph and distribution by types of carrier is given in the table on the reverse side.

INTERCITY TON-MILES PER CAPITA

	By Class I, II and III Carriers	By "Other" Carriers	By All Trucks
1940	156.6	313.4	470.0
1941	201.6	409.5	611.1
1942	209.7	237.6	447.3
1943	214.3	208.8	423.1
1944	205.0	233.3	438.3
1945	205.9	299.3	505.2
1946	217.3	367.9	585.2
1947	262.7	449.1	711.8
1948	319.7	406.1	725.8
1949	322.0	529.6	851.6
1950	434.1	708.9	1143.0
1951	471.2	754.5	1225.7
1952	456.0	793.3	1249.3
1953	483.3	888.4	1371.7
1954	448.5	883.0	1331.5
1955	504.6	872.0	1376.6
1956	496.2	1028.8	1517.0
1957	495.6	942.4	1438.0
1958	492.5	933.0	1425.5
Projections at 1950-'58 average annual change			
1960	545.5	1007.4	1552.9
1965	678.0	1193.4	1871.4
1970	810.5	1379.4	2189.9
1975	943.0	1565.4	2508.4
1980	1075.5	1751.4	2826.9

NO PLACE TO GO BUT UP....

BUT MANY CHALLENGES ALONG THE WAY

■ In mid-1961, approximately 75 million vehicles share the highways of America. Of these, more than one out of 10 are in fleet use. They include several million small trucks, most of the larger trucks and trailers, nearly all the buses and at least two million passenger cars. Their profile is outlined in some detail on the chart which immediately follows.

Together, they form the core of highway transportation today. Together, they account for most of the commercial tonnage moving on highways of today and tomorrow. And, together, they face the not-always-kindly attitude of . . .

The Other 90 Per Cent

This group owns most of the passenger cars plus several million of the smaller trucks . . . serving on the farm and in small business enterprises. For most of these owners, a car or truck is something which may help earn a living; something which provides personal transportation. They buy, service and replace their vehicles (usually one at a time) much as they would a refrigerator, a TV set or even a house.

By-and-large, they are a contented group, giving little more thought to the problems of highway transportation than, say, the next parking space.

Of course, they do some fussing along the way. They don't like the quality or the price of their cars. They think they're being robbed on taxes, seldom aware of the fact that their average—something less than $200 a year—is one of the biggest bargains in all history. And, habitually, they fuss at the big trucks and buses with little awareness of the impact these vehicles have on their personal standard of living or the nation's economy.

The Men of Action

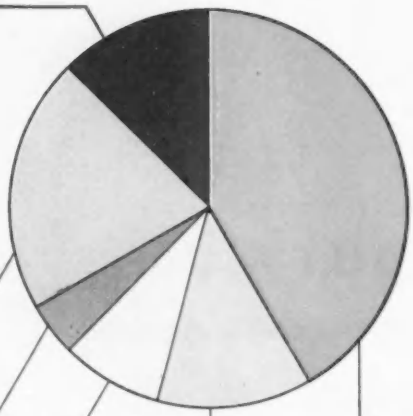
But, for the fleetman, trucks are a deadly serious business. From them he earns his living . . . in rare cases a substantial one. We have seen the progress these men of action have made to date. We have seen how they literally reshaped America. And we have plotted the bright and rosy future that lies ahead. But, in plotting that future, we have made one great assumption—that trucking will have the leadership it needs for survival.

As in every business, the fleetman faces competition from many quarters. But, unlike most businesses, he is dependent on the use of public highways for which he pays his proper share. Such usage of a public facility invariably brings political action to the foreground. It may come locally, or from the state or Federal governments. It may come fairly and within the rules of general economics. Or it may be strictly harassing, inspired by prejudicial groups.

It would be easy to look down the road ahead, citing only the glamour of vastly improved new "rigs" rolling down the new network of super highways. But it would be wrong on at least two counts. Much trucking of today and tomorrow never sees the open road. And there are big competitive hurdles along the way.

That is why our look at the future is focused largely on the problems of today. For only when they can be equitably resolved will the full potential of the future become a reality.

We will look first at the challenges to all fleet management. Next, the special problems of the intercity carrier—private and for-hire. Finally, the possible effect of new concepts, particularly piggyback, on the whole of motor transportation.



THE CORE OF HIGHWAY TRANSPORTATION TODAY

is in the hands of the fleet managers. Together they operate over 8 million vehicles . . . about 10 per cent of the nation's total vehicle registrations. Yet this relatively small group accounts for the vast majority of intercity tonnage, past, present and future. Vehicle numbers are estimates. See note at lower right.

	NO. OF VEHICLES*	THESE ARE THE SPECIAL PROBLEMS
PRIVATE TRUCK FLEETS	**3,400,000**	MORE GOVERNMENT REGULATION
UTILITIES		Publicly Regulated Rates/Special Needs for Power Accessories
MANUFACTURERS		Economics of Distribution
FOOD DISTRIBUTORS		Economics of Distribution/Refrigeration/AFDOUS
RETAIL & WHOLESALE		Cost per Delivery/Economy of Operations
CONSTRUCTION		Special Equipment/Transport between Locations
LEASE & RENTAL		A Challenge to and for All Fleets
PETROLEUM & CHEMICAL		Special Equipment/One-Way Loads
FARM (FLEET ONLY)		One-Way Loads
"FOR-HIRE" FLEETS	**940,000**	TOUGHER COMPETITION
COMMON CARRIERS . . . GENERAL FREIGHT		Rates/Claims/Terminal Efficiency
REFRIGERATED		AFDOUS Code/Weight/Cube
PETROLEUM/CHEMICAL/BULK		Extreme Competition/Rail/Pipeline/Barge
HOUSEHOLD MOVERS		Oldest and Least Challenged Intercity Success
HEAVY HAULERS		Extreme Size and Weight Problems
CAR CARRIERS		No. 1 Current Rail Rate-Cut Target
CONTRACT CARRIERS		Same as Corresponding Common Carriers
EXEMPT CARRIERS		Threat of Full Regulation
GOVERNMENT FLEETS	**580,000**	POLITICAL INFLUENCE AND VEHICLE UTILIZATION
FEDERAL		" " " " "
STATE		" " " " "
COUNTY		" " " " "
MUNICIPAL		" " " " "
BUS FLEETS	**250,000**	THE BATTLE OF THE PASSENGER CAR
LOCAL TRANSIT 50,000		Mass Transport and Traffic Congestion
INTERCITY 20,000		Competition/Passenger Car/Rail/Air
SCHOOL 180,000		Political Ineptness/Safety
PASSENGER CARS IN FLEETS	**2,000,000**	
TRAILERS IN FLEETS	**1,000,000**	
TOTAL IN FLEETS	**8,170,000**	

*See note at lower right

Biggest challenges to commercial highway transportation center in

STORM CLOUD NO. 1: Continuing lack of complete understanding by 90 per cent of vehicle users—the general public.

STORM CLOUD NO. 2: Tougher competition for the "For-Hire" carrier from private trucks, rail, water and air . . . probably in that order. In the bargain, a threat of common ownership dominated by railroads.

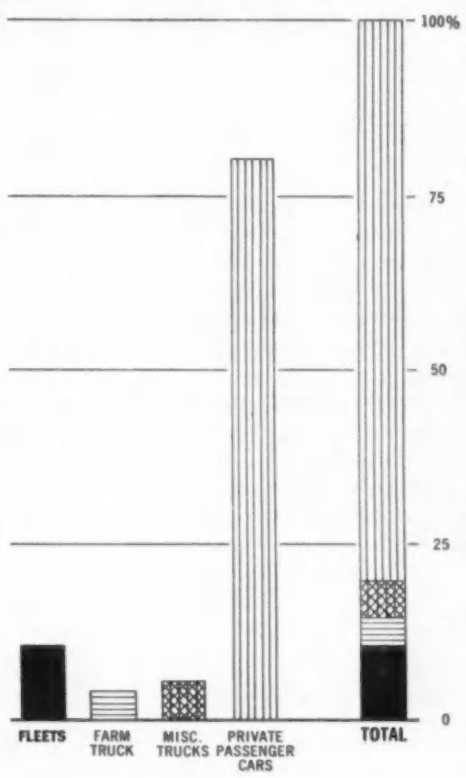
STORM CLOUD NO. 3: The possibility of full Government regulation for private trucks in intercity service.

The Challenges to all Fleet Management . . . Private and "For-Hire"

Dynamic Management
Effective Public Relations
Legitimate and Harassing Regulations
Sound Financing
Sensible Labor Relations
Accident Reduction
Proper Equipment Selection
Efficient Maintenance
Fuel & License Taxes
Other Taxes
Highway Costs

in addition—all intercity fleets (Private and "For-Hire") face these problems

Sizes and Weights
Reciprocity
Ton-Mile Taxes
New Forms of Transportation



FLEET VS. NON-FLEET VEHICLES

Chart above shows relationship between fleet and non-fleet vehicles. Despite the uneven balance, fleets dominate commercial highway transportation.

All vehicle counts are estimates . . . based on data from Bureau of Public Roads and COMMERCIAL CAR JOURNAL. BPR figures for total cars and trucks are presumed accurate. Number of vehicles within fleet categories and trailer totals are based on BPR "Highway Cost Allocation Study" of 1957, up-dated to current. Number of vehicles in all fleets is COMMERCIAL CAR JOURNAL estimate.

THE LONG LOOK AHEAD...

FOR ALL FLEET MANAGEMENT

"A manager," says our dictionary, "is one who conducts business with skill and economy." Nowhere is the definition more appropriate than in all phases of the trucking industry. For the fleet manager has a dual role—first, as the head of his own operation; second, as a key figure in one of the world's most dynamic industries.

The same dictionary, which specializes in avoiding mundane descriptions, defines dynamic as "active as opposed to static." So, the manager of today faces the heritage of a dynamic past and an even more dynamic future. If, individually and collectively, he meets those challenges, his horizons are unlimited. They are only suggested by the projections we have noted so far. If he doesn't, the industry can be seriously hurt by the storm clouds ahead. It is as simple as that.

Two Kinds of Leadership

The measure of success within a single fleet operation is usually counted in dollars and cents. In the case of a "for-hire" carrier, it is in dollars of net earning. In the case of a private truck operator, the measure lies in how well the private fleet performs its mission.

The measure of success as an industry leader can be pinpointed by this example. Floyd B. Noerr is president of a relatively small truck line which bears his name, in Lewistown, Pa. It is primarily a special-commodity carrier with annual operating revenue averaging slightly less than $1-million a year. But, in 1952, he was President of the Pennsylvania Motor Truck Assn. At the end of that year, some 18 trucking companies and PMTA sued the railroads for $250-million. The official complaint: Violation of anti-trust laws. The real motive: Hanky-panky on the part of railroad public relations. The result: Eventual defeat in the U. S. Supreme Court, but only after immense benefit to the trucking industry. Now the moral:

The case was docketed "Noerr Motor Freight, Inc., et al, vs Eastern Railroad Presidents Conference, et al." Floyd Noerr is a little man by industry standards, but he has a gigantic heart and the courage of his convictions. He is the kind of man who built the industry to where it is today. He is the kind of man who will build its future.

Mr. X, on the other hand, controls a company averaging close to $20-million a year with one of the best operating ratios anywhere. His voice is loud and clear when he comes upon conditions he doesn't like. But he has never held an association post; has seldom, if ever, contributed to industry "kitties," rides on a high level of success—pulled up by the coat tails of industry leaders with whom he competes.

These, then, are the marks of the "industry-oriented" leader vs the individualist. Seldom, if ever has the old adage been more appropriate—united we stand, divided we fall. Such cooperative action is doubly important in the trucking industry because of the common highway it shares with the general public.

True Public Relations

This is why public relations is an industry as well as an individual problem. Good public relations can mean much to an individual company, both with the people of its local community and the buyers of its service.

Industry public relations can mean much in Harrisburg, Providence, Sacramento, or Washington as well. For in the public eye, the big truck-trailer that rolls down a mountain out of control is not the truck of the ABC Products Corp., or the XYZ Trucking Co. It is the trucking industry, per se. The little truck that double-parks in the middle of Main Street isn't the Frozen Ice Cream Co., or the PDQ Delivery Service. It, too, is part of the trucking industry.

Ours is a government of the people, by the people and for the people. The same people who drive cars on highways are represented in legislative sessions in Austin or Olympia, Bismarck or Washington. They are the people who write the laws, dictate the rules and regulations we live by.

Safety with Logic

Some of those rules are legitimate and necessary. Others may be strictly harassing. That is why the good fleet manager must be always alert. That is why COMMERCIAL CAR JOURNAL's Editor Bart Rawson, less than a year ago, invented the term "Reg Ball." It is, at times, a national contest between the trucking industry and regulatory agencies — more real, more dramatically fought than baseball itself.

Nothing is more vital than good safety regulations.

Often, ICC Safety Director Ernie Cox has stood before the forum of public opinion. He is a dedicated public servant, well aware of the problems of industry, and also well aware of the rising curve of traffic fatalities. Somewhere, between economic impossibility and sensible requirements, lies the road that all fleetmen must travel to effect safety with logic, and accident reduction within the means of human will.

On the subject of accident reduction, Amos E. Neyhart, the grand "old man" of safety at Penn State University, recently bared his soul to CCJ thusly:

"I've given a lot of thought to the problems of the motor transportation industry. I keep wondering why it is so difficult to reach top management, when their very existence depends upon safe and efficient operation. I believe that they are so busy growing, and spend so much time on financing the business, that they have no time left to back away and take a real hard look at the whole business structure.

"I believe that the truckers are going to have to work together still more closely in the future. They must spend money on their personnel departments. The workers are the life blood of any organization, yet many still hire their people by the trial and error method. They must achieve full acceptance, by the general public, of their professional drivers . . . a step well under way. No longer are drivers generally considered as bums and second-rate citizens. Now, they and their families can hold their heads high . . . only because industry in whole or in part has accepted high-

5 of the Great Safety Rules

Highway safety remains the common crusade of all Americans. Great organizations, like the National Safety Council and the Automotive Safety Foundation, work on the problem full time. Many other groups, and virtually every fleet, have active programs. Yet the carnage continues: Last year 38,000 killed, 3-million injured.

For its own part, COMMERCIAL CAR JOURNAL *is vitally aware of the problem . . . for nine consecutive years has won awards for its safety endeavors. For this special edition, instead of adding volumes to the words already written, CCJ Editors stand on these five cardinal rules for safe driving:*

1. **Drive smoothly** . . . with the accelerator, the brake, the steering wheel. Imagine yourself as the passenger, put him at ease. . . . Amos E. Neyhart.

2. **Get the big picture** . . . way out ahead. Avoid last minute panic, anticipate trouble before it happens. . . . Harold L. Smith.

3. **Always have an escape route.** If "the other guy" doesn't do what you expect, know what you will do. . . . Harold L. Smith.

4. **Keep your eyes moving.** Look ahead, behind, and out to the side. This is the best antidote for hypnosis. . . . Harold L. Smith.

5. **Be careful off duty.** If you **must** drive after moderate drinking, always remember that alcohol measurably **slows** your reaction time. . . . Donald S. Buck.

way safety as a cardinal precept of operating on the highways."

Always Details

As individual fleet operators, the managers must also consider many specific problems within their own organization. Among them, sound financing.

In an earlier chapter, we explored the disdain with which bankers looked upon the trucking industry. Today they have a far more realistic approach. But the company must be big enough, worthwhile enough, and sufficiently stable to warrant free-flowing funds.

Closely related is the whole principle of leasing. For leasing, by-and-large, is an alternate method of financing, with a string of optional services available. For some fleets, it provides major advantages, particularly release of capital. Others find only marginal benefits, such as in an isolated fleet location. For some there is no benefit at all. It is every man's choice, even among the highly specialized.

Labor accounts for the largest single item of fleet expense. For a briefing on challenges there, we have turned to the best expert of them all, Ben Miller of American Trucking Assns. . . . see Box.

Another area of management lies in proper vehicle selection and good maintenance. Both are vital. Again, in earlier chapters, we have seen the results of the fleetmen's influence on the truck manufacturers, both individually and, more importantly, collectively. Today they have a far better vehicle than they had 20 years ago. Tomorrow they will have a far better vehicle still. But management must set the pace.

Speaking for the Truck-Trailer Manufacturers' Assn., Managing Director John B. Hulse puts it this way: "Communications is our most vital program. We have done much collectively" (see page 136) "but, in the final analysis, each member in our competitive system is strictly on his own in his dealings with his customers. He must find out what the customer needs."

Maintenance is another vital area. Most of the really successful fleets show maintenance as a higher percentage of expense than average fleets show. Why? Because they know that dollars spent on good maintenance come back on the profit side of the ledger. They also know that the very same dollars buy good will. For much of the smoke from diesel engines, much of the roar of gutted mufflers, many of the brakes that fail are strictly the product of poor maintenance.

And, always, there are taxes. How much, in what manner, and to whom? It is a cardinal principle of the industry that trucks pay their own way on the road. Yet many doubt its validity. Once again, it is up to the trucker, individually and collectively, to prove the point.

Millions of dollars have been spent on road tests in Maryland, Idaho and Illinois to help solve the complex riddle of who should pay how much. Results at this writing are still inconclusive. But it is obvious that fuel and license taxes will be related to highway costs. No fleetman can do the job alone. Once again, it must come through united effort.

The Hauls Get Longer

As we move on from the challenges of all fleet management to those of the intercity trucker—both private and "for-hire"—a whole new set of problems comes into focus.

First, and foremost, is sizes and weights . . . a subject already discussed in a previous chapter (page 148). Much progress has been made. Much work has yet to be done, particularly in the area of uniform code.

Here the trucking industry is itself partially to blame. For years mid-western and western carriers have generally accepted the standards of the AASHO Code—basically 18,000 lb per axle, 32,000 lb per tandem, 76,000 lb maximum GCW, 60-ft overall length. But the easterners say we don't need 76,000 lb, we don't need 60-ft, but we do need 22,500 lb on an axle and at least 36,000 lb on a tandem. And so the battle goes.

Closely related to it is reciprocity between the states. Let us say that Company X has a standard rig. There is no such thing today, but assume that it is diesel-powered, that it grosses at 65,000 lb and that it is domiciled in St. Louis. Can it go East, or South, or West? It all depends on reciprocity agreements of the moment. It can go to a few states without any restrictions at all. It can go to others through the simple and logical expedient of paying a fuel tax for the miles it travels within the state border. In still others, it must pay a mileage tax based either on the ton miles of its gross, or the number of axles it carries.

And in still others, it meets a border guard as rigid as the iron curtain. There it must stop, declare its weight, the details of its load and, within the dictates of the sovereign state, pay in advance the equivalent taxes it might have paid had it been domiciled there. In some cases, it can not move at all. It is not a pretty picture and it is one in which the leaders of tomorrow must build a whole new frontier.

BEN MILLER

Labor Looks Ahead

America's foremost truck labor analyst comments on Jimmy Hoffa, featherbedding and management planning

by BENJAMIN R. MILLER
Director, Industrial Relations Dept.
American Trucking Assn., Inc.

• Labor Relations is the process by which management deals with unions. In trucking, despite many union contracts, this invariably means the Teamsters. It is the largest and most militant union in the United States.

For several decades bargaining for the employers was usually accomplished through informal groups, getting together just before contract expiration time. But application or interpretation of the contract was primarily accomplished by the union on a company by company basis and only the union had a complete knowledge of each and every advantage it obtained.

Accordingly, the Teamsters often presented the employers with a "fait accompli" to be written into the agreement for all. It was understandable that the results brought working conditions which greatly compounded the cost of wages, hours, and fringe settlements.

During the last decade trucking employers became more conscious of their need to prepare for negotiations, research their costs, and administer their labor agreements uniformly. They formed well-staffed associations and leaned heavily upon the central "clearing house" information available at the Industrial Relations Department of ATA. Their approach to negotiations took on a business-like attitude that at least stemmed the tide of uneconomic working conditions.

It became obvious that restrictions on "spotting of trailers," strict classifications of employment, the use of unneeded helpers, unwarranted guarantees, and outmoded trip rates for road drivers, among other things, were strait jacketing the very flexibility which made the trucking industry so great a transportation media. Not all such practices were imposed by labor. Some were sponsored by management in times when they might have been appropriate.

While some gains have been made, much more has to be done. Employers must continue to prove to the union that practices of this nature unfairly give some employees greater earning opportunity than others who do the same work. This occurs within a company as well as between companies . . . . invariably breeds discontent to the detriment of both management and labor. They must prove that burdensome conditions actually stifle the ability of the industry, and for that matter, the union, to remain prosperous.

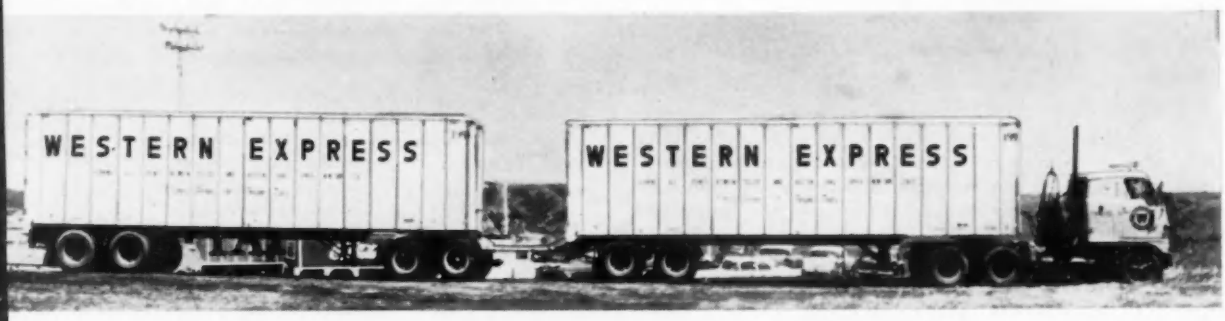
Trucking employees are among the highest paid in the land, yet trucking management has not been able to convince the union that wage rate increases must be in keeping with its income. This industry, like all other forms of transportation, is inherently vulnerable in work-stoppages. For its "product"—service—cannot be inventoried, stock piled, or back ordered.

Looking up the road ahead some labor relations, signs are easy to read. Teamster President James R. Hoffa has posted them. Organize the unorganized—particularly offices of companies which now have other teamster employees. Negotiate wide area contracts—perhaps nationally. In organizing efforts the union will be less likely to use economic action because of the proscriptions on boycotts and picketing contained in the Taft-Hartley Law as amended by Landrum-Griffin.

With respect to wide-area contracts it must be recognized that many wide-spread interstate or national trucking companies are not adverse. They would rather engage in one negotiation than many. Moreover, they would tend in that direction to avoid a series of potential local work stoppages, caused by local union officials who wish to bootstrap the patterns set by other locals.

Such wide-area agreements are not, per se, inadvisable. Particularly is this true if they are purely master agreements covering matters which might be uniform in character, and set a *minimum* rather than *uniform* wage scale. Factors affected by operations could be negotiated locally. In this light the area contract becomes more palatable to the shortline or local company.

Since the Teamsters' announced plans will directly affect all operators of motor trucks, all management will need to give much greater attention to its labor relations. Particularly, management must know its rights and responsibilities in union attempts to organize its employees. And it must know the means by which it can bargain a reasonable and livable labor agreement. Both steps are governed, in some degree, by Federal Laws.



THE COMMON CARRIER

To most Americans, "the trucking industry" means the big intercity rigs of common or "for-hire" carriers. True enough, most of their equipment is big, modern and well-managed . . . like this "turnpike double bottom". Yet in actual numbers, they account for only one out of ten U. S. trucks.

THE BATTLE FOR INTERCITY FREIGHT

Private and "for-hire" trucks compete actively for the nation's intercity freight. In many areas they take different, and sometimes bitterly contested, points of view. They also fight a common battle with the railroads and, to a lesser degree, the inland water carriers, the pipelines, the airlines, and the challenging new forms of transportation, such as piggyback, fishyback and birdyback.

To focus the picture, suppose you are a manufacturer in Peoria, Ill. You have 20,000 lb of freight destined for New Brunswick, N. J. It's dealer's choice. You can ship it by:

Regular rail freight.
Common-carrier truck.
Your own private truck.
Contract-carrier truck.
Piggyback in a rail-owned trailer.
Piggyback in a motor common-carrier trailer.
Piggyback in a freight-forwarder trailer.
Piggyback in your own trailer.
Air freight, or express.
Maybe soon—fishyback or birdyback.

Piggyback, or even birdyback, could change the future greatly. But, right now, odds are at least 80-20 that you will pick one of the first three choices. Straight rail freight would probably be the lowest cost, would certainly take the longest time. Your own trailer would be the fastest, but would be totally uneconomical unless you had a legitimate return load. (An alternative would be the contract carrier . . . but only if loads were on a regular basis and with a similar return load problem.)

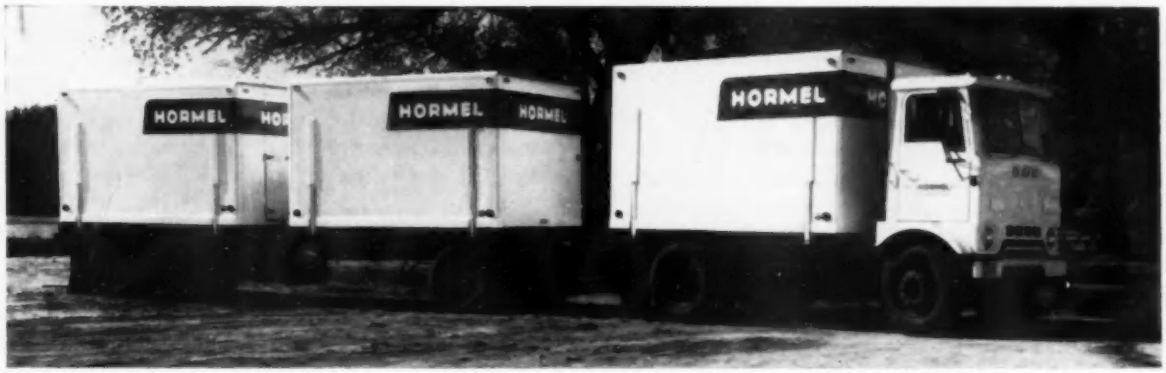
In between lies the highway common carrier.

Common Carrier Views

And, indeed, the common carrier does lie "in between." For, he faces a running battle on at least four fronts . . . (1) other common carriers, (2) the private truck, (3) rails, and (4) piggyback.

The first one requires little discussion. It is the competition experienced by all business, though sometimes the trucker gets an added dose. Despite the strong arm of government regulation, it is estimated that there are 140 for-hire carriers authorized, in one form or another, to haul between Philadelphia and New York.

Against **legitimate** private carriage, the common carrier holds only the briefs of circumstance. Since passage of the Transportation Act of 1935, the common carrier is required to furnish "proof of necessity" and obtain "operating rights," for all points he services, from the Interstate Commerce Commission. This is a boon in preventing devil-take-the-hindmost competition . . . but is a definite cut in favor of the private carrier who needs no such permit.



THE PRIVATE CARRIER

Biggest of all truck users is private industry . . . running the gamut from TV service trucks and local bakeries to big, highly-specialized long-haul equipment like this one, owned by Hormel. Three separate containers can be dropped off along the way in company's complex delivery pattern.

Then, there is the matter of "service availability." Without the common carrier, the little manufacturer would have no trucking service. Yet, if too many manufacturers become big enough to operate their own long haul fleets, the common carrier argues there may not be enough business for him to survive.

Biggest intra-industry problem of the moment centers in the "gray area." At first it was known as illegal private carriage. Lately, it has been more accurately described as illegal "for-hire" carriage. Most often, it means that a trucker is hauling his own goods in one direction, then picking up a load that is not his property for the back-haul. Sometimes he buys the load and sells it at destination. Sometimes the load is outside all government restriction under the original "farm-to-market" exemptions. In a great many cases, the operation is technically within the law but both "edgy" and "gray."

According to many, the practice has made big inroads on freight volume handled by the "for-hire" carrier. And from this springboard stems the almost constant endeavor of the common carrier to "get the rules changed" . . . to tighten the loop holes . . . and, in the bargain, to force more regulation on the private truck operator.

. . . vs the Private Truck

Obviously, the private truck operator holds a totally different viewpoint. James D. Mann, managing director of The Private Truck Council of America, sums it up this way: "The most serious problem facing the private truck operator today is the skillful, long-range campaign of the 'for-hire' carrier, both rail and motor, to tear down the right of private business to operate its own trucks.

"We should remember that private carriage has always preceded 'for-hire' carriage. 'For-hire' carriage followed to fill the needs of business. But, there are those who would have us believe that the purpose of business is to fill the needs of the 'for-hire' carrier.

"We hear much about freedom of the press, freedom of speech, freedom of religion. But one of the essential freedoms so frequently overlooked is the freedom of choice. When a non-transportation business uses its own trucks to distribute its own product, or pick up its raw materials, it is exercising freedom of choice. It is just that simple. When a business operates its own trucks, it does so for two purposes . . . one, to save money and, two, to render better service . . . and, in most cases, service outweighs cost."

Vincent L. O'Donnell, managing director of ATA's Private Carrier Conference, pinpoints the problem even more closely: "Unfortunately, many for-hire carriers look not to improvement of their own facilities, but to legislative and regulatory restrictions, as a means of forcing traffic of private truck operators back to for-hire channels. The current threat is Federal registration with the Interstate Commerce Commission. We regard such a proposal as the first step toward eco-

nomic regulation of private carriage and will vigorously resist it.

"But let me add that it is a tribute to ATA's organizational structure that a conference such as ours can engage in lively and sometimes bitter disputes, yet join on a united front on matters of common interest to all."

Whichever way the private vs for-hire battle swings, the freight stays on the highway. Truck and trailer manufacturers are happy, highway taxes go into the coffers and total highway tonnage moves up. But, now, consider the third front. . . .

Trucks vs the Rails

In the early stages, it affects mostly the common carrier again, and in two-pitched battles. One is direct competition—rail freight vs highway freight. Here, trucks have the easy edge on all but the heaviest and longest shipments as demonstrated by past performance in speed and flexibility of service rendered.

But, the rails recognize this point, "want in" in the trucking business. As pointed out in an early chapter (see page 130), they could have come in before 1935 . . . for the asking. Only a few railroads were smart enough to do so, mainly the western roads. Then, in 1935, the Congress recognized the needs for separate competitive forms of transportation to avoid, once and for all, the iron-clad monopoly the rails once held.

Obviously, if the rails are permitted "in," their substantially greater financial position could quickly dominate the whole transportation structure. This is their theory of common ownership.

"This," said ATA Chairman Welby Frantz recently in a special interview with COMMERCIAL CAR JOURNAL, "is the greatest threat of all. For if the railroads are ever permitted to take over the trucking industry, America will lose, at that moment, all benefits of the competitive system so inherent to our way of life."

Veteran ATA Managing Director John V. Lawrence backs him up with this historical review: "Defending the National Transportation Policy, against the continuing efforts of the railroads to undermine it, has been one of ATA's most important tasks. The other has been to defeat the rails' campaign for common ownership. Most of ATA's major battles have been fought on these two issues, and it is expected that they will remain the two most outstanding issues confronting the industry."

Selective Rate Cuts

Now, the railroads battle on still another front—selective rate reductions. To get the picture straight, you have to back up a bit, realize that all "for-hire" rates—both rail and highway—were originally based on "what the traffic will bear." Back in the 1800's, the rails carried coal for about one cent a ton-mile. But when a manufacturer offered furniture, it was infinitely lighter per cube and the rate might well have been 10 times as high. Thus the commodity rate structure developed . . . with hundreds of classifications . . . and the truckers followed suit.

With freer choice now permitted by ICC, the rails are re-examining their existing rates. They may decide "this one is too high"—particularly if it is a commodity in which they have lost out to trucking.

The current best example is the hauling of new passenger cars. During the past 25 years, the trucks have siphoned-off almost all of this business because they could handle it cheaper, faster and with direct service to final destination.

In a rate cut here, the truckers are particularly vulnerable because their road equipment is specialized for only one commodity—passenger cars. The railroads know this, figure that if they can pull the rate rug out from under fast enough and far enough, these particular truckers will die. Other traffic can absorb the temporary loss in revenue. Later, the rates can be raised again.

An honest technological development helped pave the way. There can be no doubt that the new tri-level rail cars which handle 12 passenger cars at a wallop is a sound engineering move. It could well earn a reasonable rate reduction.

Obviously, it is the railroad plan to follow a similar attack against other specialized carriers. Liquid and bulk commodities, requiring one form of container or another, are typical. So, perhaps, are the livestock haulers, which have highly specialized equipment. Close behind is the refrigerated carrier, faced not only with specialized equipment, but with new standards in performance requirements.

Will the railroads succeed? Is the picture really so gloomy? The answer: Yes and no. They may, indeed, be able to win back some of the very long hauls. And there are truckers who agree with this possibility. But only if—and today it is an extremely unsatisfied if—the rails can offer the service and speed needed to meet today's economy, can they make important inroads.

The railroads still face the problem that they cannot, in most cases, get the goods to final destination without transfer. Even a passenger car, dumped by high-speed rail freight at Denver, is a long way from "home" if its buyer lives in Alamosa. This situation leads directly to the fourth battlefront . . . piggyback.

The Three Faces of Bus Activity

More than two-thirds of all buses (180,000 now) haul kids to school. Their numbers will increase rapidly as suburbs move further out and as the trend for consolidated schools in rural districts continues.

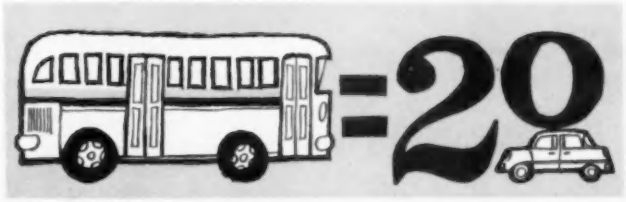
Biggest problems center in the paucity of operating funds and good management. All of the moneys must come from taxes . . . but parents pay most, know the economic value of good school transportation. Most of the managers are part-time teachers, individual owners, even senior students. As the school fleets grow bigger, demand will come for better management.

Technically, few school buses are really buses at all. Rather, they are elongated truck chassis with school bus bodies. The future is bright indeed for the makers who can offer a rear-engine integral bus at a competitive price. Several are in the works now—feature lower profile, more seats and greater safety.

Intercity buses have had their share of problems too. Some are closely related to the ills of rail passenger service, i.e., the necessity to maintain fixed schedules over fixed routes, many of which have low income potential. Biggest enemy of both is the private passenger car.

But, unlike its railroad counterpart, the intercity bus can change fast to meet changing conditions. There is also great potential in charter service (see page 130) and in new "packaged tours" which often very effectively use up the slack in available equipment. On top of that is constant improvement in service offered. Arthur Hill, president of the National Assn. of Motor Bus Owners, had this interesting comment for CCJ:

"We are optimistic about the future. In its early days, the intercity bus was looked upon primarily for economical transportation. Today, we offer a quiet, comfortable ride downtown to downtown in air-conditioned, air-suspension coaches. The trips often approach railroad time and, in some cases, even airlines when travel to and from the airport is considered. Seasoned travelers by air and Pullman, who never rode buses before, are finding the luxury service much to their liking."



Buses in city transit face a tough, but far from hopeless, future. Born of necessity, they will survive of necessity, if the city itself is to survive. There is no other way out. For every city planner knows:

1. The hopeless impasse of modern congestion . . . made worse, rather than better, by super access roads that bring more private cars to town.
2. The simple fact that one bus equals an average of 20 cars in street space . . . and must be given traffic priorities.
3. All known concepts of future high-speed city transit are centered on fixed routes, must depend on feeder bus service, usually at both ends.
4. The problem of multiple transfers. Once a fare is on a bus, he'd rather stay there than change and change again.

From the equipment standpoint, most big city buses are now diesel, an increasing number air-conditioned. The big challenge will always be to make the ride as comfortable, convenient, fast and economical as the private passenger car. On the last point, actual cost is seldom considered, may not even be fairly assessed in terms of value received.

By-and-large, the major transit fleets have superb and more than adequate shop facilities, are finding increased revenues from outside service offered to smaller bus and truck fleets. A substantial new revenue also comes from charter bus service.

CHALLENGING NEW CONCEPTS

Piggyback is the magic word of the hour. It is billed as the panacea for both highway and railroad ills. Non-technical writers love to picture the open road without trucks. Rail proponents see sky-high profits. And Teamster Boss Jimmy Hoffa sees red.

Behind piggyback comes possible greater use of fishyback and the future may hold a bright but limited spot for birdyback. In between the last two, is an as-yet-unnamed variety. For want of a better title, we'll call it "whirlyback" . . . containers unloaded from fishyback by helicopter . . . and possibly reloaded on piggyback.

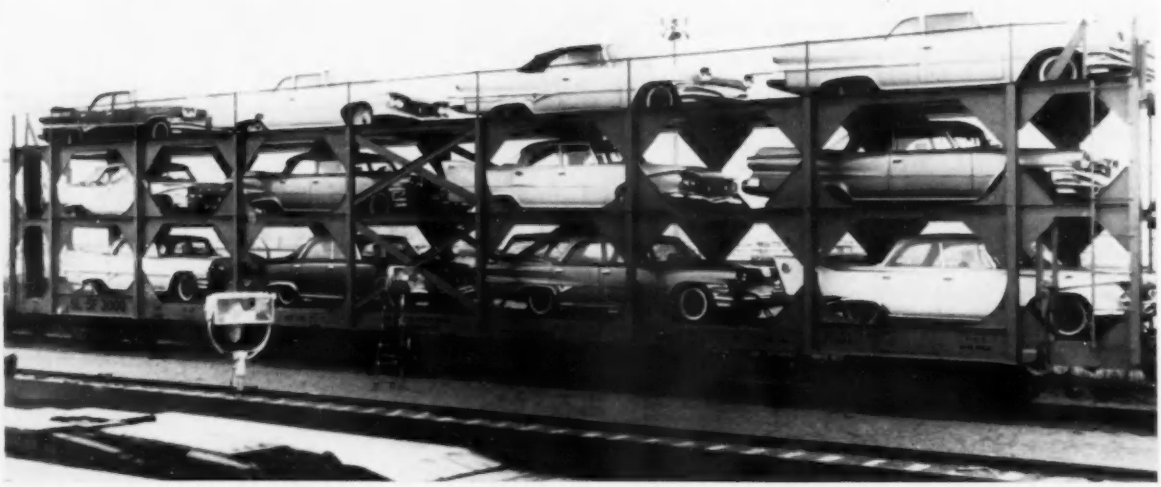
Piggyback in Five Flavors

In Plan I, the railroads carry trailers belonging to "for-hire" truckers at a negotiated fee. It is the plan truckers like most, for it provides them with an alternate method of long-haul shipment, yet they keep control of all freight that originates along their lines. For the very same reason, it is the plan many railroads like least, regard it in some quarters as "direct aid to the enemy."

Plan II is an all-rail enterprise in which the railroads carry their own trailers, go into direct competition with the trucking industry, serving points along their rights of way with door-to-door trailer service and without

"Whirlyback" may some day eliminate seaports altogether or take on the short haul job from birdyback to consignee.

Tri-level flat car hauls 12 passenger cars, is one of newest rail breakthroughs.



Piggyback, like this Plan II operation, now competes actively with long haul trucking.

Fishyback, a la Matson to Hawaii, is a natural for combined sea-land hauls.

the necessity of acquiring highway certificates. Obviously, railroads like it best. And now, according to Dun & Bradstreet, it accounts for about 50 per cent of piggyback volume. The truckers like it least.

The railroads also like Plan III wherein they can carry trailers owned by the shipper or a freight forwarder. This is a direct parallel to the long-haul private truck operator, wherein he elects to ship his trailer by rail but with an added "ace." Usually there is a flat fee—empty or loaded. This provides an obvious solution to the problem of an empty back-haul, since the railroad rate is usually low enough to equalize the loaded-vs-empty transportation cost. And the proviso for freight forwarder service opens the door to the smaller shipment—another cut into the trucker's transportation "pie."

Plan IV is very similar to Plan III. But here the shipper owns the flat car as well as the trailer. It is usually confined to the very large shipper of specialized commodities. But it is also open to a "pool" operation, usually through a freight forwarder.

Finally, Plan V is almost a partnership between the railroads and the "for-hire" truckers. Here they can, and do, offer through-joint tariff for shipments which perhaps originate on a truck line far from the railhead, take a long movement by rail, then travel again over the highway to final destination. Small now, it may have a very bright future.

Flexibility—the Missing Link

In all piggybacking there is a basic fault. It is the lack of flexibility. ATA Chairman Welby Frantz puts it this way: "When a railroad puts together a train of substantial length and achieves a reasonably long line haul, it develops a high level of economical operation. But putting such trains together and breaking them up is not a fast operation. A trainload of flatcars in piggyback service, to offer competitive time, must be a 'hot shot' operation. Some railroads have said they need 50 cars to justify such a run and later hope to increase the total to 100.

"Such trains must avoid switching districts, must be loaded and unloaded from special ramps. Obviously, there is a limited portion of railroad operation that can be so dedicated without raising havoc with conventional rail service.

"Add to this the fact that piggyback service usually ignores rate classifications and has to be fast . . . what is to prevent the shipper from demanding piggyback service for all his freight? The results could be chaotic to both rail income and service."

A far simpler, more logical and completely legal solution is the device of interchanging regular freight on a joint through-rate. Here again, either the railroad or the truck line can originate freight, ship it partly by rail and partly by highway, and provide the shipper with a through bill of lading. For reasons that appear largely emotional, the railroads have so far opposed this move, except in isolated dribblets.

Lack of flexibility at both ends of the line and in the rail line itself makes it easy to see why piggyback has a long way to go. If the shipper is in a city like Chicago (and there is no other like it) the start is fairly easy. But suppose the destination is Hummelstown, Pa. The nearest piggyback "hope" would be Harrisburg. And if the highballing trailer train had to stop there, it would cut at least two hours off its New York run.

Will Rate Structures Change ?

Welby Frantz's reference to uniform rate structures in some forms of piggyback deserves a further note. It could be the beginning of a whole new approach to rate structures for all modes of transportation.

In piggyback, the **trailer** becomes the load. With virtually unlimited weight restrictions, the railroads don't care what's inside. Within weight limitations, the same thing could happen to the truckers. Already, "for-hire" carriers have been asked to quote on "flat-rate" hauling of loaded trailers belonging to the shipper.

The day may well come when, along with a uniform code of operation cost-to-coast, America will see uniform rates as well. It's a question for the future economy to decide.

Add Fishyback and Birdyback

Fishyback—trailer container service by water—offers even less flexibility. But it does have the distinct advantage of low cost and is a natural for the combined land and water shipment. Already, it is taking a very large proportion of the volume between the continental USA and its two newest states, Alaska and Hawaii. In the former, much of it also combines with piggyback on the Alaska Railroad.

It is also a natural for inland shipments to overseas points. And the current possibility of unloading by helicopter can eliminate much congestion and time loss at port facilities. It is even possible that the operation can begin and end while the ship is underway.

The day may come when fishyback service along the East and West coasts and to Gulf ports, and possibly on the Mississippi River network may be an important factor. But to date, the experiments have pretty well proved that much faster service must be offered.

Birdyback, flying the container by air, has unlimited future possibilities on the very long haul. Now, it is strictly limited by cost. If the day comes—and it may not be far off—when faster schedules and greater airborne efficiency can overcome the added cost, it could be a major factor. But again it will be limited, to air-

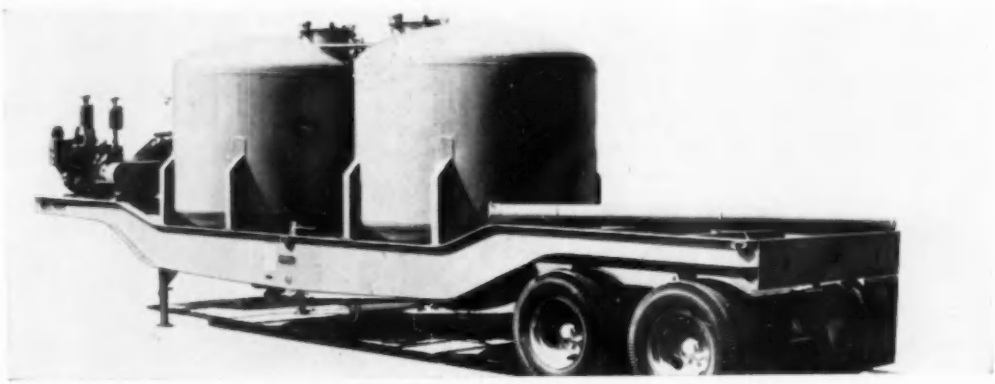
Specialists Handle the Tough Ones

If history were to record trucking's finest hour, it would zero in on the specialist . . . the guy who hauls "impossible loads" to "impossible destinations." Among them would be the household movers, utilities, car carriers, riggers, steel haulers and scores of others. Below are three examples.

MOBILE CONSTRUCTION

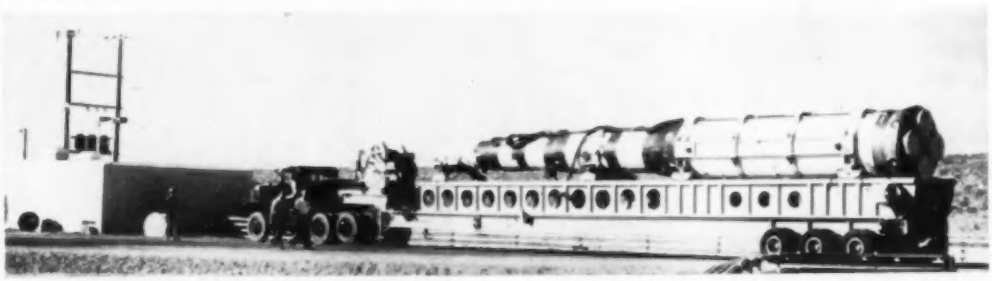
Earthmovers like this 35-ton LeTourneau-Westinghouse unit make major landscaping one of few services that is cheaper today than 40 years ago. But hundreds of miles may separate the projects. On the move, contractors turn to light-weight on-highway equipment.

CEMENT TO THE JOB



For years the railroads cornered bulk haul shipments like cement, but couldn't get it to the job. Now, new truck equipment like this Heil Jet-25, not only hauls it but unloads it at two-ton-a-minute clip, thanks to high-pressure, low-volume air.

MINUTEMAN ON THE GROUND



Intercontinental missiles travel up to 18,000 mph in space. But on the ground they often travel 1800 miles from assembler to launching pad, hampered by the heavy-hauler's greatest enemies . . . low overhead clearance, sometimes inadequate bridges.

port-to-airport service. The trucks must first get it from the shipper's door to the airport and from destination airport to consignee. Obviously total elapsed time must be figured.

Finally there are containers themselves—once more a natural for overseas shipment but limited, at least in the foreseeable future, for land movement. Why? Because the trailer itself is a pretty darned good container with complete flexibility to be spotted anywhere. The container, on the other hand, must stop to drop its wheels and stop again to pick them up. Wherever such a delay comes into the act, time and flexibility are lost. And, usually, the cost and weight of original equipment are higher. So, while the container will play an important part in future transportation, chances are good that it will be a smaller part than many proponents believe.

Short Hauls and Unions

While most intercity truckers take a dim view of these new forms of transportation, there is one trucking group that eyes them with considerable favor. It is the oldest "for-hire" trucker of them all—the local cartageman. He likes what the railroads haul, for it is he who moves most of the loads—door to door.

For awhile it looked as though further cuts in less-than-carload freight might be their undoing. "But more pressure on piggyback," writes Bill Patterson of ATA's National Cartage Conference, "will create more need for the local and short-haul motor carrier. In many instances, they will be the ones called upon to perform the local pickup and delivery service. They may also be called on to distribute from key points in the case of private carriage."

Obviously, the Teamsters take a still dimmer view of all movements that take trailers off the road. Yet, to their credit, they have recognized from the start that a place must be made for new forms of technological development. How far they will go—along with the Maritime Union, which highly contests fishyback—remains to be seen.

* * * *

Thus industry rests its case. Problems don't make the future. Men of action do. And trucking has lots of them.

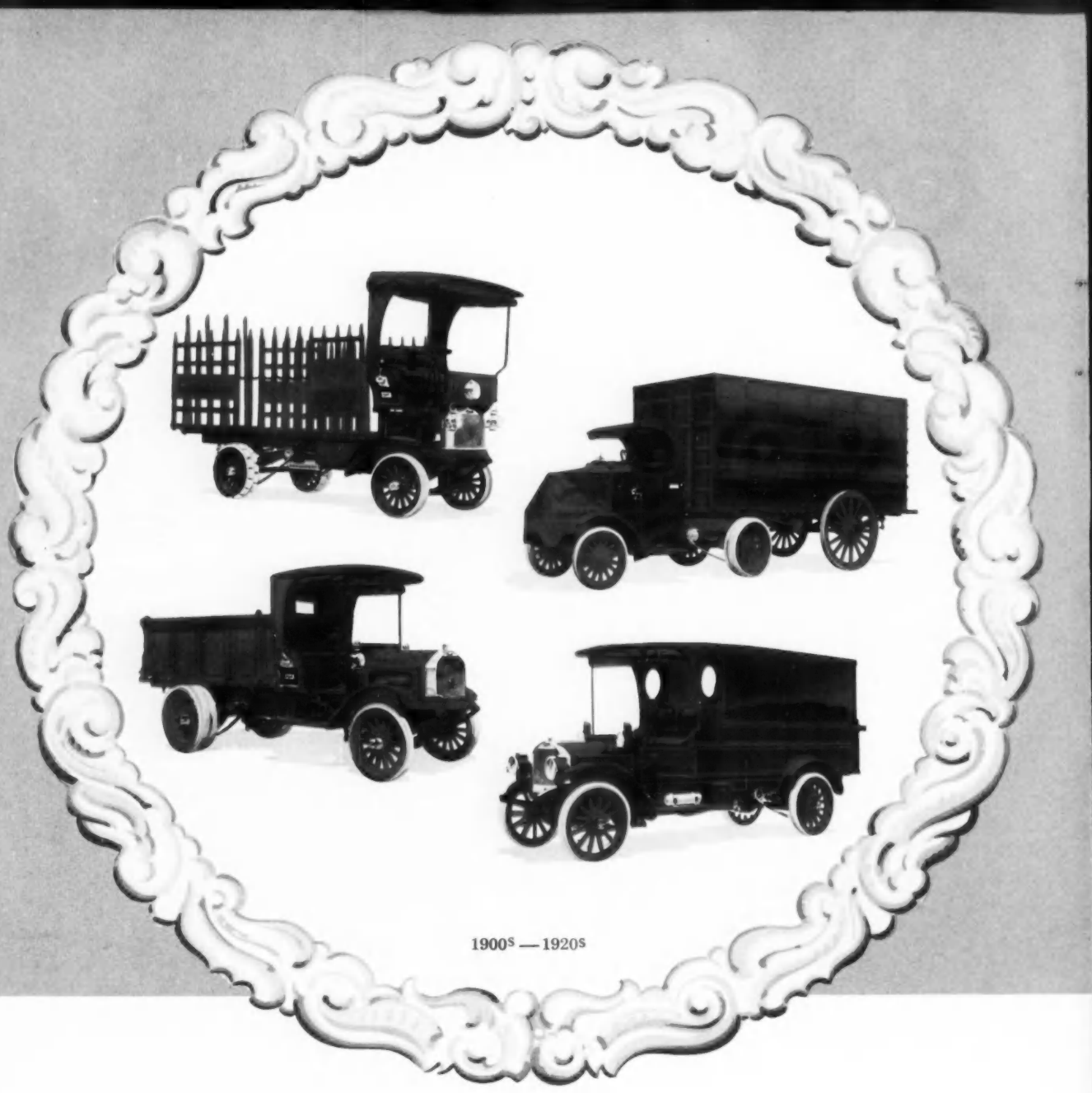
On that point alone, COMMERCIAL CAR JOURNAL rests its case also . . . stands on its predictions of future growth . . . fears only that these predictions may be **short** of the actual mark.

Oh. That thing at the right? Some day it may be the **real** freight hauler. But, if it is, trucks will bring it to the launching pad . . . trucks will fuel it . . . and trucks will handle its local pickup and delivery.

PARTNERS...

AND THE AMERICAN TRUCKING INDUSTRY

For over sixty years a working partnership has been growing between Mack—the country's pioneer heavy-duty truck manufacturer—and the American trucking industry. Mack has not only been a standard bearer in the development and production of the newer and better vehicles needed by truckers, but has been an active participant in the struggle to overcome the industry's problems. Now, at the threshold of trucking's Golden Age, Mack pledges finer products and even closer cooperation.

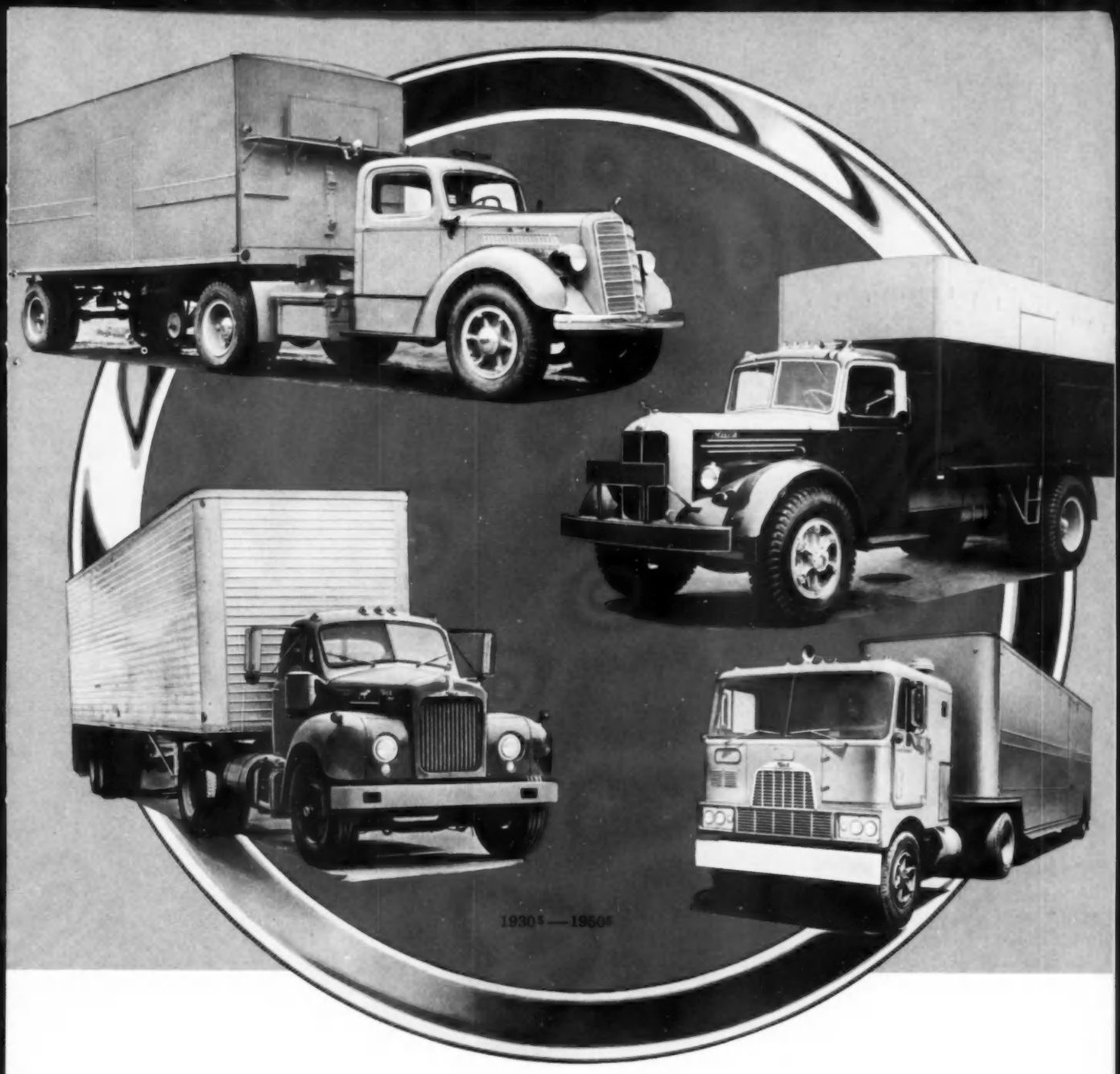


1900s — 1920s

From the beginning...

Back at the turn of the century the Mack brothers foresaw the need and provided the means for reliable heavy-duty truck transportation. They pioneered the conventional-design truck —the cab-over—the dumper—the early truck-tractor. And they built them to standards of quality that soon established leadership in manufacture as well as design. Mack trucks worked their way into the language, led by the famous Model AC "Bulldog Mack," which sprang to fame in World War I and achieved a record 24-year production run as the unchallenged king of trucks. "Built like a Mack" became a familiar expression for supreme strength and stamina.

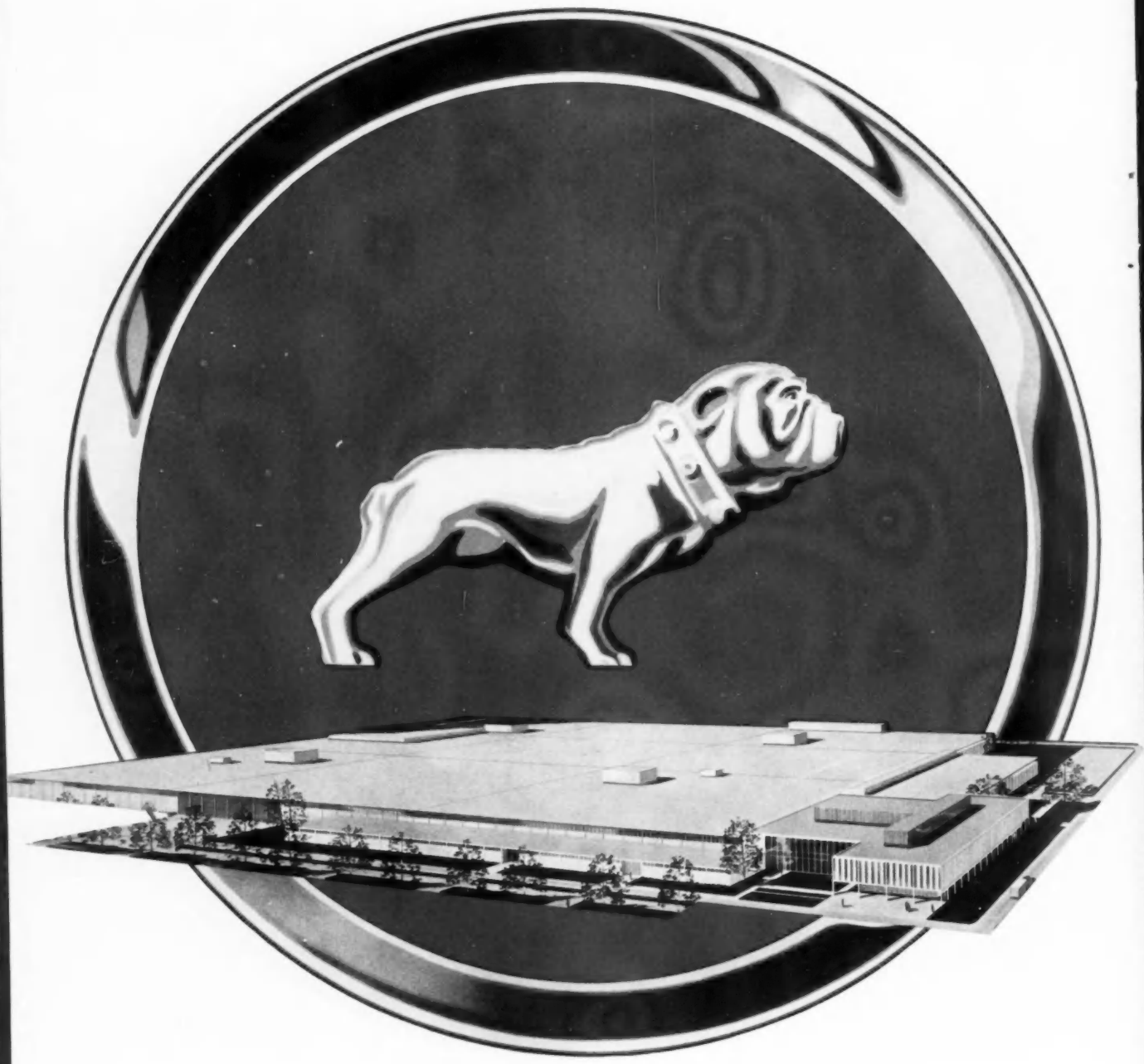
But Mack did more than develop fine vehicles for the formative trucking industry. Because trucks soon became its main business, Mack made the problems of truck operators a major concern. One of the earliest campaigners in the Better Roads movement of the early Twenties, Mack also pioneered in the fight against the discriminatory statutes that even then were beginning to plague truckers . . . and in the long struggle for uniform vehicle laws and regulations. The economic and good-will values of safe-driving training and road-courtesy programs were soon recognized and constantly championed by the Mack company.



. . . *Teamwork*

As the trucking industry broadened from local to national status . . . as its traffic increased in range and in tonnage—Mack provided the trucks that led the way. Among the many milestones: Model EHT—famous as the first successful highway tractor . . . Model L—featuring driver comfort and high over-the-road performance and capacities to handle larger loads at higher speeds . . . Model B—the first modern and functional conventional cab . . . Model G—newest success in high profile, cab-over highway haulers. And the components: among them the notable Mack Balanced Bogie, which brought to full favor the 4 x 6 truck and tractor . . . and the Thermodyne® diesel engine, a new high in powerplant efficiency and life. Mack pioneered truck diesel power, introducing a new dimension of operating economy, dependability and amazing engine life. Today Mack maintains a commanding lead in the production of diesel-powered vehicles—blue ribbon holders of the modern Bulldog breed of trucks.

And today, Mack is more active than ever in working for the best interests of the industry. To this end, Mack gives active and consistent support to the many organizations—local, state, national—which have come into being with the growth of trucking. It has provided trained and informed public speakers. In its advertising and public relations activities, it has consistently enhanced the industry's public image. And from the beginning, Mack has been a major supporter of the ATA Foundation, co-sponsoring an annual series of national radio network broadcasts on summer weekends, which help to familiarize millions of listeners with the services and problems of the American trucking industry.



For the future . . . Confidence!

Expansion—right now, and millions of dollars worth—is being carried out for new Mack production facilities . . . a solid expression of confidence in the growth potential of the trucking industry. This major investment program will soon bring into production the new 1,000,000-square-foot plant at Hagerstown, Md.—most modern engine and gear-making plant in the automotive industry. A broad program of new development and expansion is also under way at Mack's Allentown, Pa. plant. From these facilities will emerge the finest trucks ever to set wheels on the American highway. On the eve of its 62nd birthday, Mack looks forward with vigor to a new era of mutual growth and accomplishment that promises to make new history. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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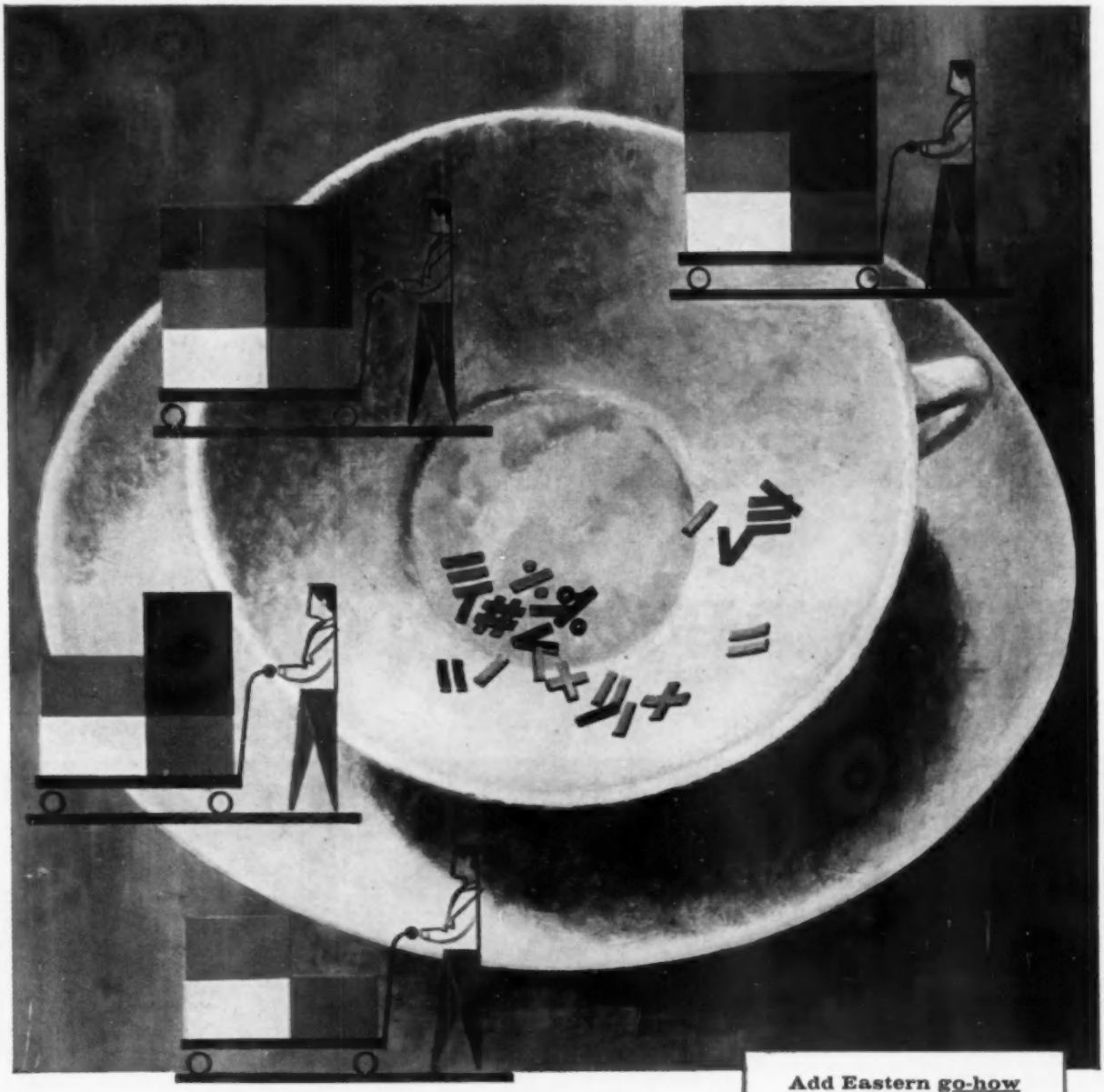

What's in the teacup for your business? To shippers, the projected 1965 population of 193,000,000 alone means a jump of about 21% in transport needs . . . which means a rise of *12% in ton-miles needed per capita.* You'll have to ship more, yet keep costs down. Tomorrow's demands offer impressive new opportunities for your firm—important new responsibilities for the modern motor carrier.

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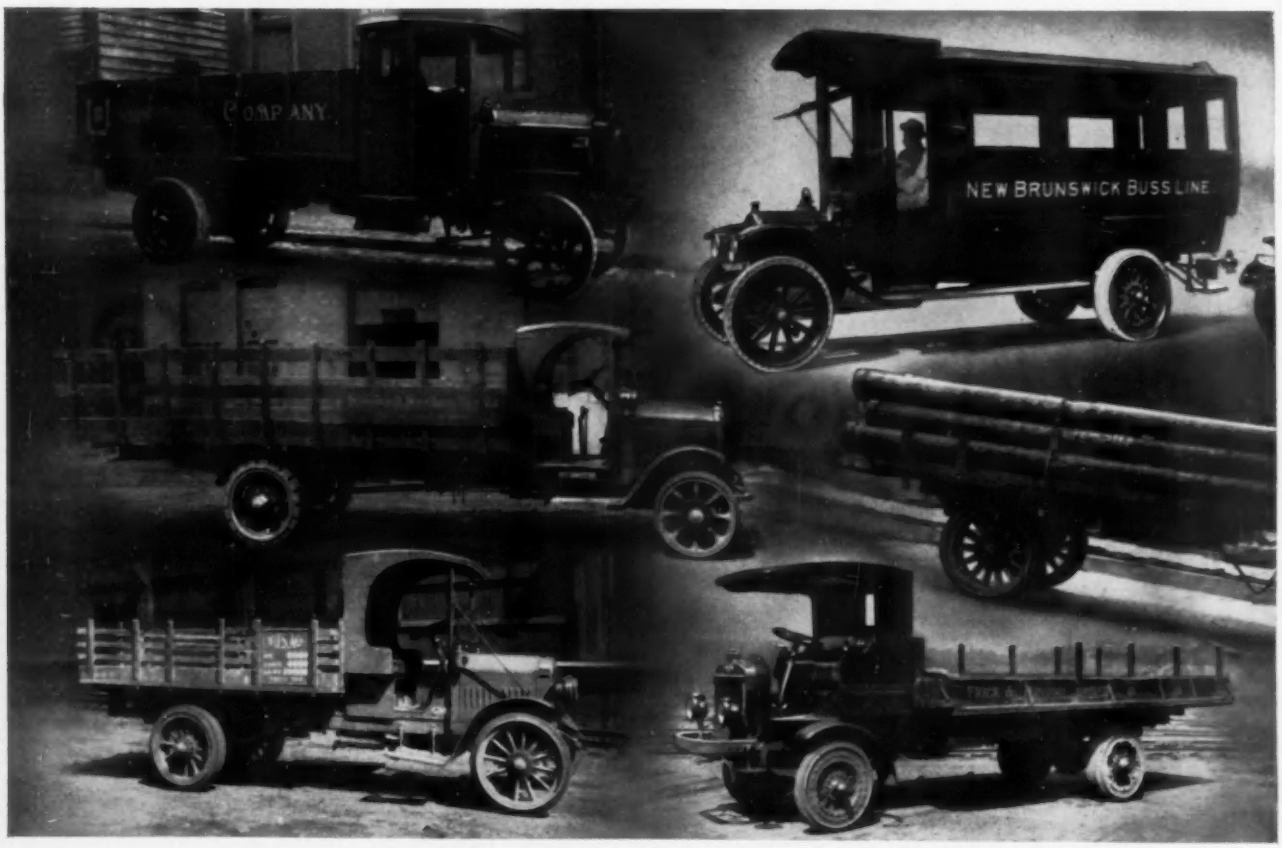
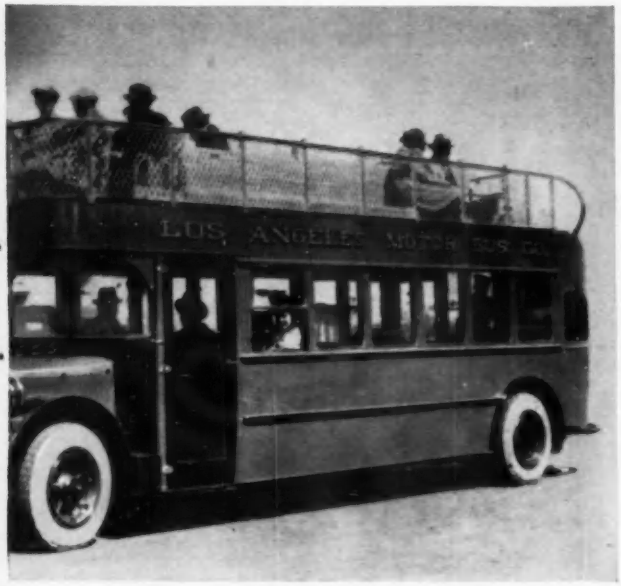
FIRST CHOICE THEN... FIRST CHOICE NOW...





In the mid 1920's, when these trucks and buses were in their heyday, drivers and operators relied on Bendix-Westinghouse for dependable, long-service air brakes. That picture is unchanged today. In fact, more trucks and buses are equipped with Bendix-Westinghouse Air Brake systems than all other makes combined. And you can be certain that in the future we will continue to maintain the same high engineering and manufacturing standards that have made Bendix-Westinghouse the number one choice in air brakes for so long.

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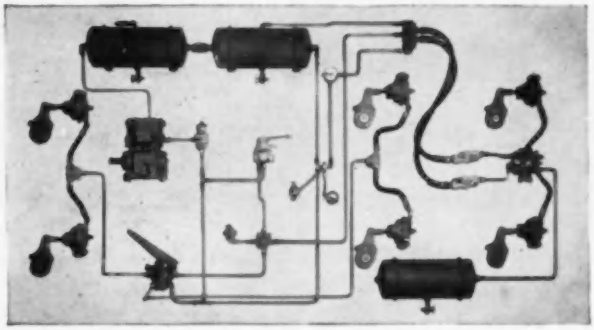
Behind the outstanding dependability of Bendix-Westinghouse Air Brakes stands "system engineering." Each basic component and all optional accessory items are designed and engineered *to work together as a perfectly balanced system.* The result is maximum operating efficiency plus minimum operating and maintenance costs. That's why operator preference—surest guide to most-value-per-dollar—has been overwhelmingly for Bendix-Westinghouse Air Brakes since 1923. Be sure you specify Bendix-Westinghouse . . . the *system-engineered* air brakes.



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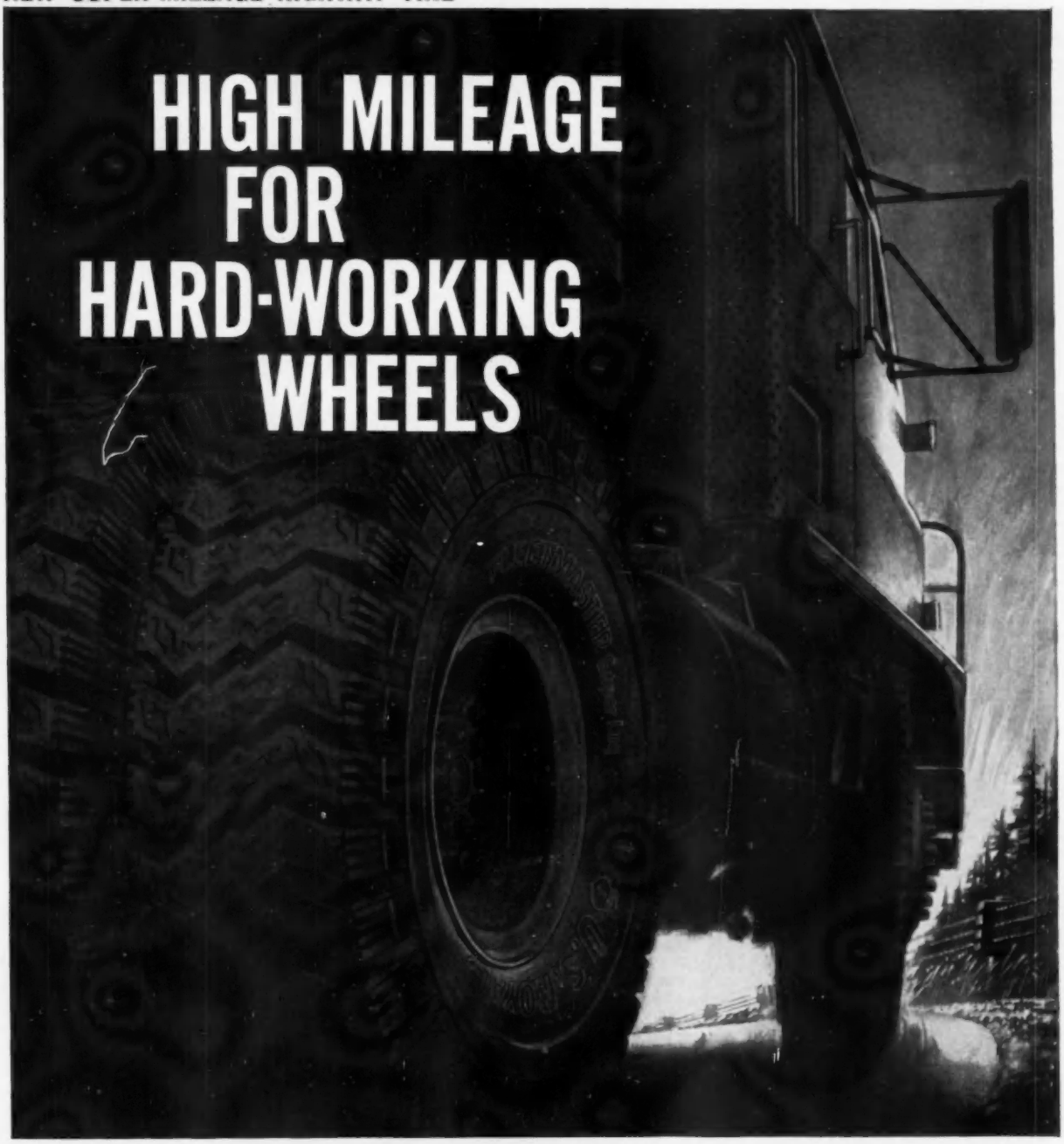

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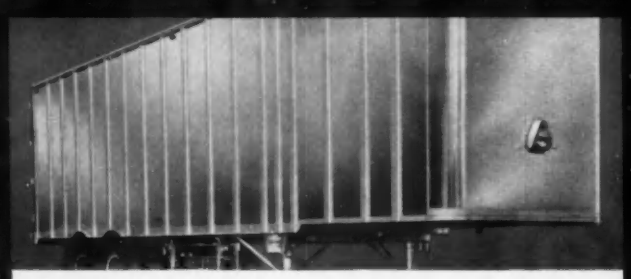

TRAILERS—In 1933, the original semimonocoque unit was built to Alcoa specifications for using fully aluminum's high strength-to-weight ratio. Since, new designs have upped capacity, cut costs—such as one-piece Alcoa Aluminum roofs and modern floor systems

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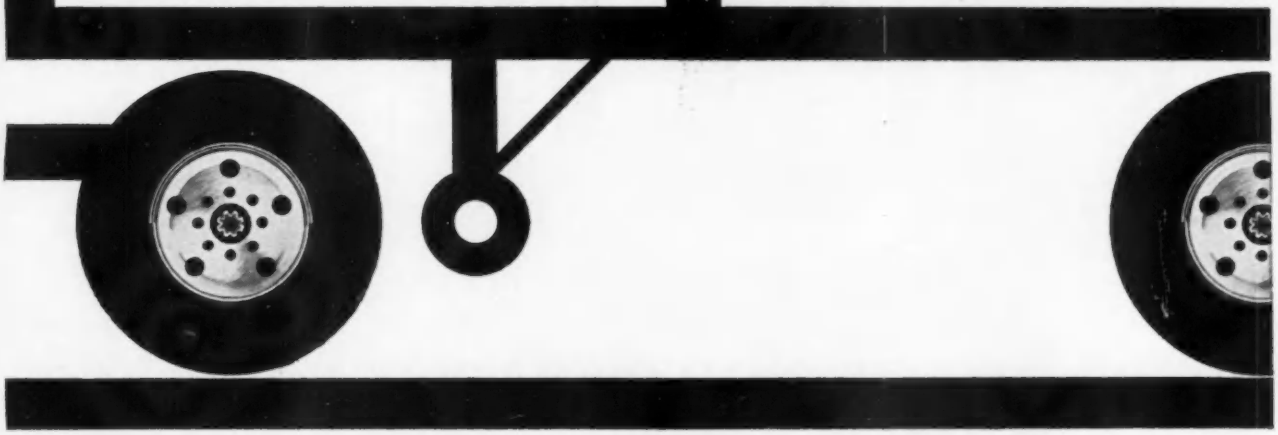

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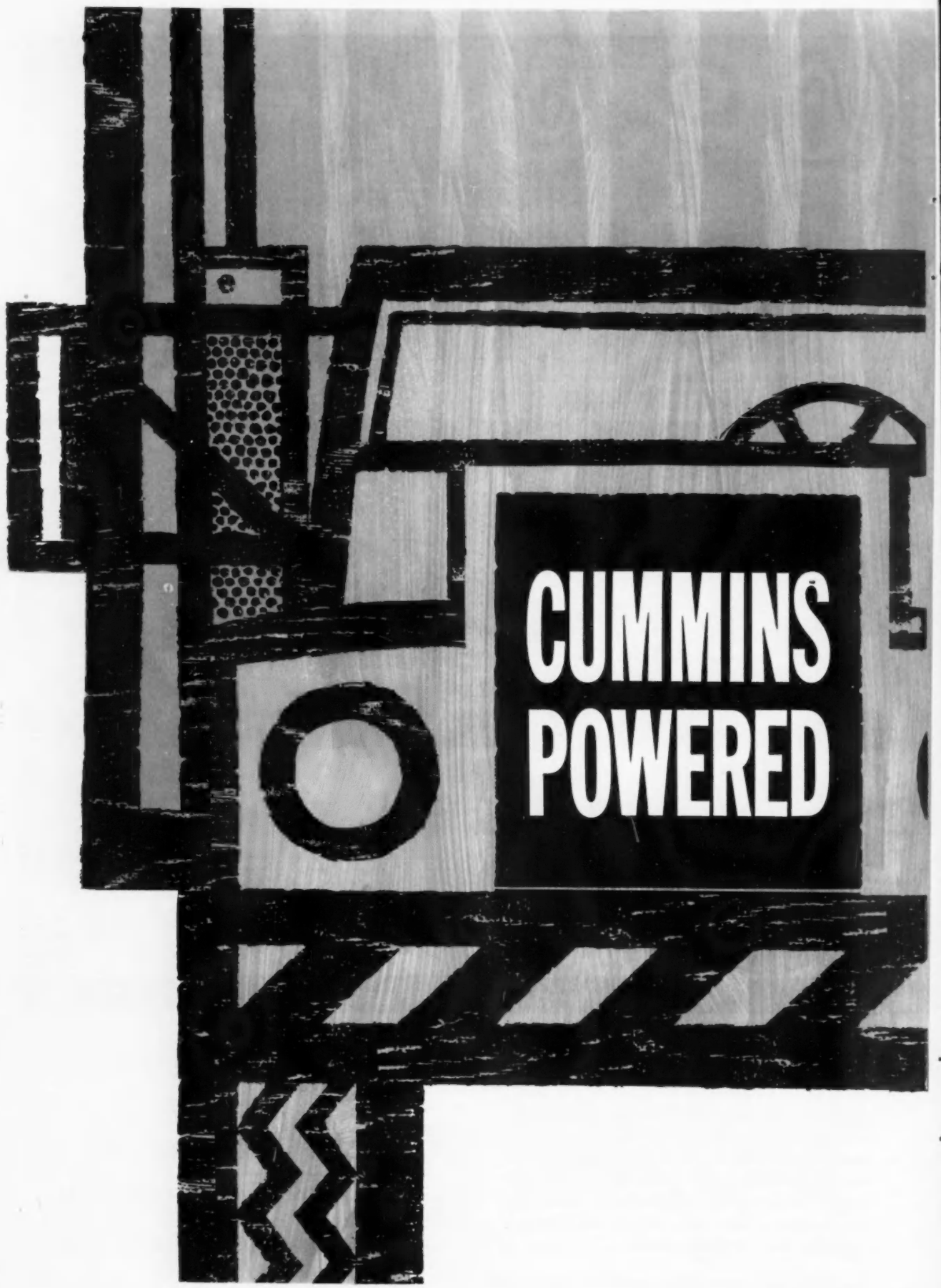
CUMMINS
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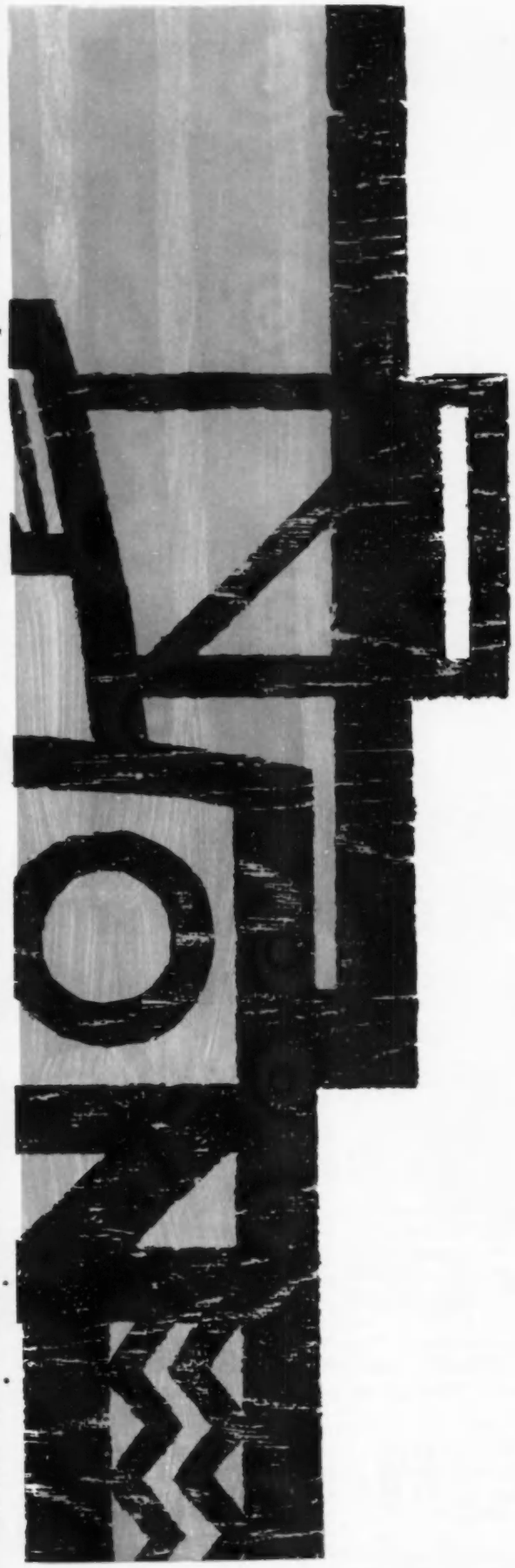

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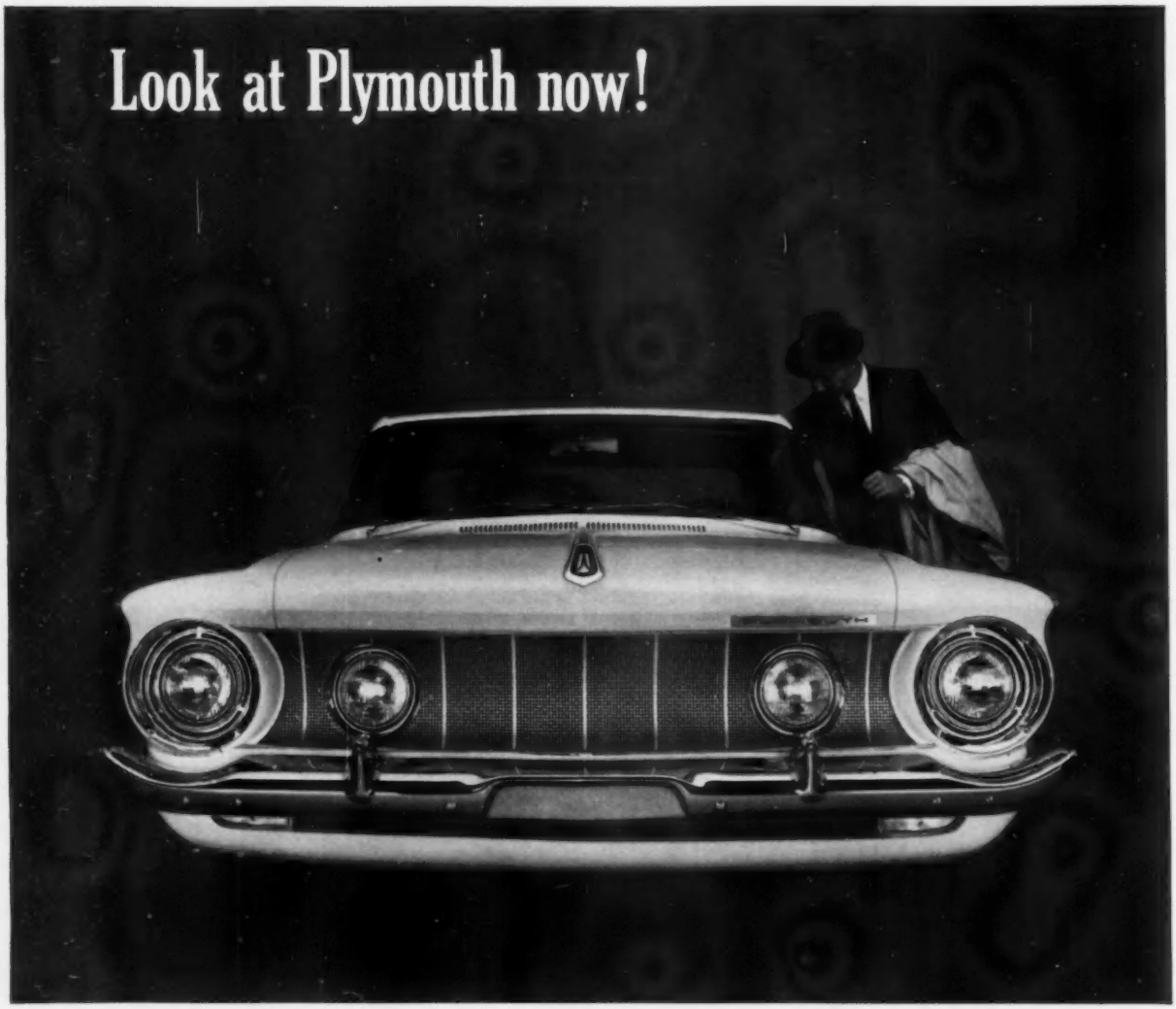

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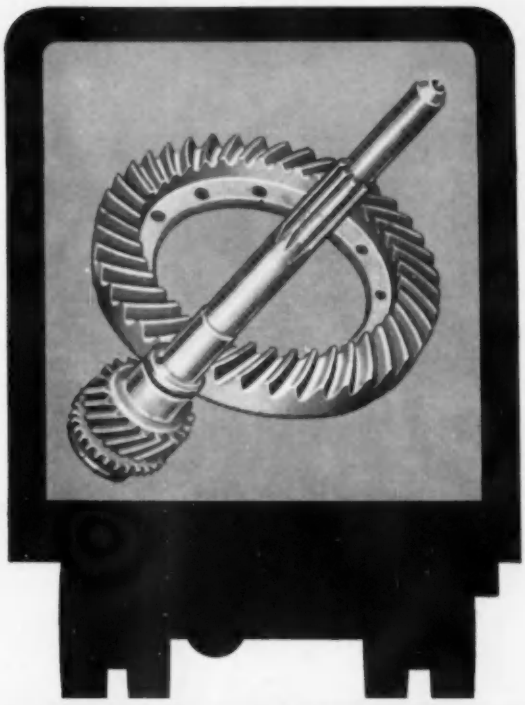

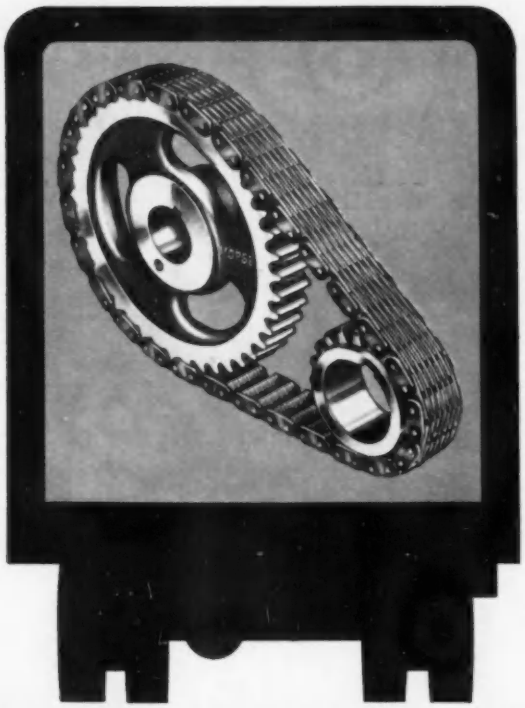

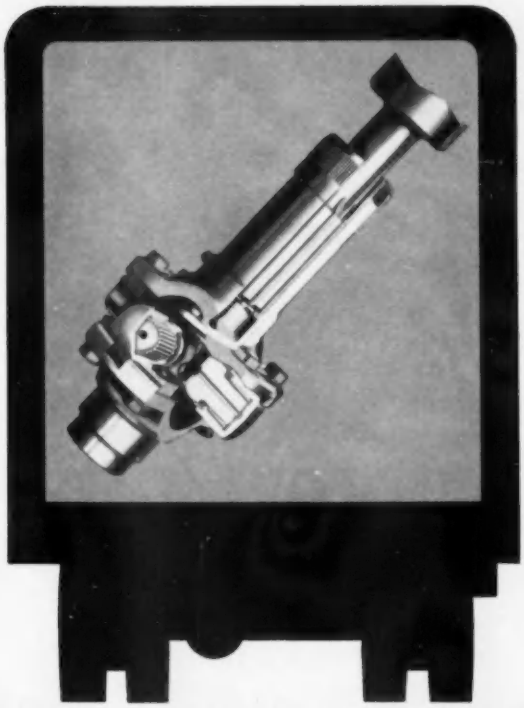

BORG-WARNER

SERVICE B-W PARTS CO.

Fleet operators who use B-W drive line parts are assured greater service and dependability from their fleets. The efficient, trouble-free performance of Borg-Warner products means less down time for your trucks, more profit for you.

To serve you better, all Borg-Warner automotive parts are available from 22 B-W warehouses from coast to coast through . . .

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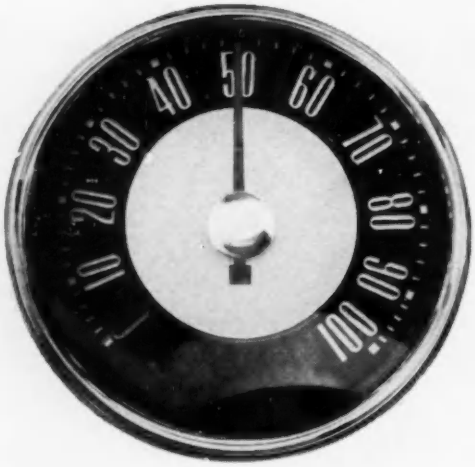


This truck is earning money

This fleet owner has cut down time, built profits with heavy-duty, high-quality Blue Streak ignition parts: new Blue Streak Polamatic, the voltage regulator that polarizes at the touch of a button, adjusts at the turn of a knob — pre-assembled LubriPoints — mirror-smooth Domed Points—encapsulated, vibration-proof Shock-Master Condensers — moisture-proof, extra-tough Coils — completely-sealed Dimmer Switches. He agrees with fleet owners all over the country: "Blue Streak ignition parts are tops."

This truck is burning money

This fleet owner is depending on undependable parts. Result? Lots of down time, fewer rolling hours, less profit. Solution? A switch to dependable, long-lasting, heavy-duty Blue Streak ignition parts. He should take Sherlock McKanick's maintenance advice. You, too. Write today for his Free Maintenance Check Chart (Form 1568) — and keep your fleets in trim. Standard Motor Products, Inc., 37-20 Northern Blvd., Long Island City 1, New York.

Keep 'em moving with Blue Streak . . . the most complete line of heavy-duty ignition parts available

REGULATORS • SWITCHES • CONDENSERS BLUE STREAK COILS • CONTACT POINTS • WIRE AND CABLE

This is the birth of a Burton coil spring

Here is the exact moment when a rod of steel becomes a Burton Coil Spring. This is the moment when the sum total of years of experience, engineering know-how, quality control and scientific operation of the latest and most modern manufacturing equipment all combine to produce quality.

Rugged, tough, most years of service . . . that's a Burton Coil Spring or a Burton Leaf Spring. Millions in use on every type of moving vehicle. Dependable performance results from exacting specifications and proper controls we maintain throughout the manufacturing processes.

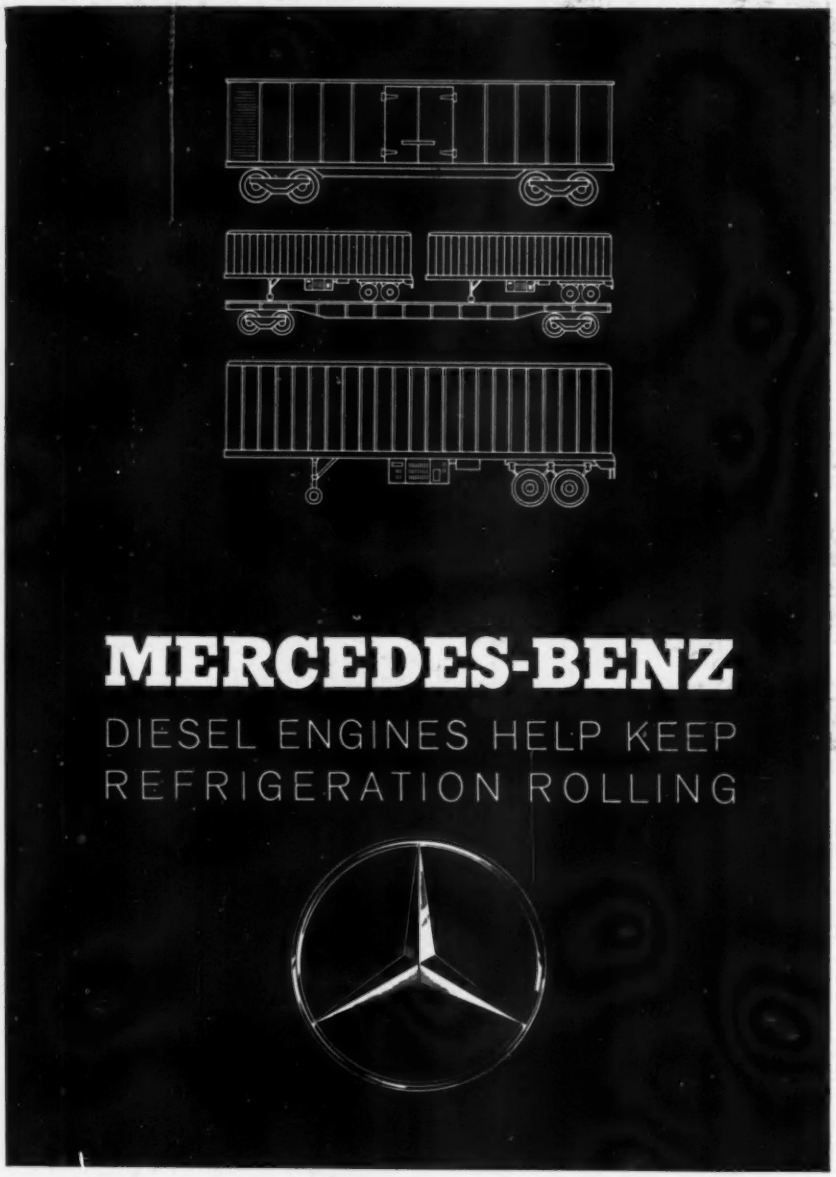
The engineering ideas are born here

On the drawing board . . . out in the shop . . . experienced minds at Burton are concentrating on the problems of automobile and truck springs. We can help you solve your problem of more payload and less weight. Call on us. 37 years of knowing-how.

BURTON Auto Spring Corporation

WESTERN AVENUE AT 48TH STREET • CHICAGO 32, ILLINOIS

Since 1923 we have manufactured automotive springs exclusively



MERCEDES-BENZ

DIESEL ENGINES HELP KEEP REFRIGERATION ROLLING

Light, quiet, compact and economical to operate, Mercedes-Benz diesel engines are adaptable to both direct mechanical and electro-mechanical refrigeration. Manufacturers and designers seeking refrigeration units intended for railroad cars, unitized containers, and truck and piggy-back trailers will find a seasoned team of Mercedes-Benz specialists in sales, engineering, service and supply, ready to work with them from the planning stage on. The finished product will not only have the utmost in economical and dependable diesel power but the assured acceptance of Mercedes-Benz quality. **MERCEDES-BENZ DIESEL ENGINES—A PRICE-QUALITY STANDARD SECOND TO NONE.**

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THE BEST STOPS IN THE WORLD ARE MADE WITH BENDIX BRAKES!

. . . Bendix builds more brakes for more different vehicles than any other manufacturer. From go-kart to highway hauler—whatever the vehicle—there's a Bendix® brake to stop it better, surer, safer. Forty years' experience in design and production has made Bendix the one-stop source for all braking needs. ■ Bendix makes more than 400 different kinds of automotive wheel brakes. In addition, Bendix vacuum power brake systems are specified more often than all other makes combined. To date, over 6,000,000 of the low-cost Hydrovac® units have been sold. Be sure to specify Bendix equipment on the next vehicles **you** order. ■ Bendix is the name to rely on, too, for dependable, long-service heavy-duty brakes, power steering and universal joints.

BRAKE HEADQUARTERS OF THE WORLD

Bendix PRODUCTS DIVISION South Bend, IND.

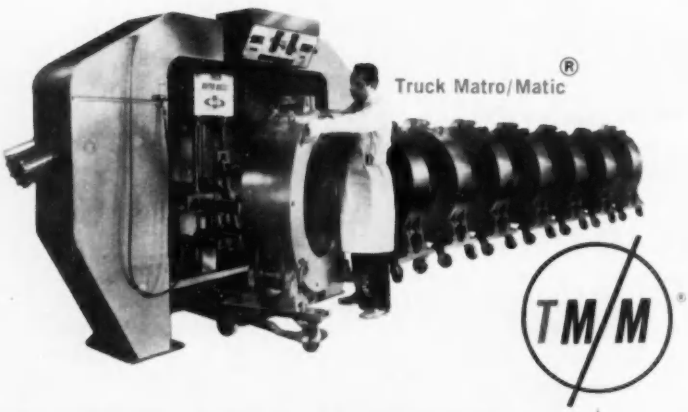
THE Bendix CORPORATION

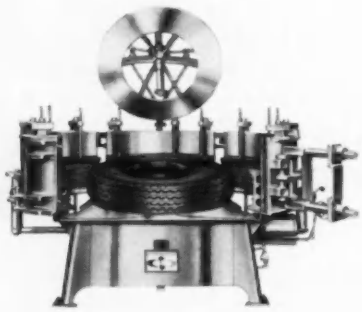
FACTS ABOUT...

Modern Truck Tire Retreading

The modern process of truck tire retreading, to meet your needs today and tomorrow, is available through hundreds of retread shops across the country equipped with push button, Bacon American Truck Matro/Matic and All Purpose Truck Molds.

This is the only retreading machinery that has *proved 100% satisfactory* for retreading STEEL CORD tire casings. Maximum mileage is assured, when Truck Matro/Matic or All Purpose Molds are used for *any type* of tire. The new treads are applied in a manner that does not *distort*, buckle or stretch the tire . . . all of which causes dangerous new flex points. Straight treads, plus natural flexing eliminates serious "heat up," the number one enemy of truck tires.





All Purpose Truck Mold

There is a Bacon American-equipped tire retread shop near you. We will send you the shop name and complete information about modern truck tire retreading upon request.

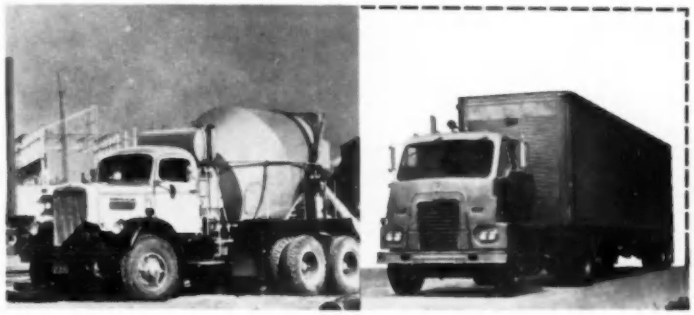
BACON AMERICAN CORPORATION

Dedicated to the Best in Retreading Equipment

718 S. Elliott Street, Muncie, Indiana
Plants: Oakland, California; Muncie, Indiana

Garrison
POWER STEERING

cuts driver effort, fatigue; improves efficiency and increases maneuverability!



All your present work fleet can now benefit with Garrison hydraulic power steering booster units! Garrison Power Steering is easily installed on existing trucks, wheeled tractors, motor graders, off-highway construction equipment, material handling equipment... in fact, wherever business rolls on wheels! With Garrison kit installations on your present equipment you enjoy the same steering advantages as new vehicles with factory installations.

MANY HOOKUPS—Regardless of truck make or model Garrison has fully engineered booster units and hookups for any type of steering... single axle, dual axle with single or dual cylinders, driving-steering axles, etc.

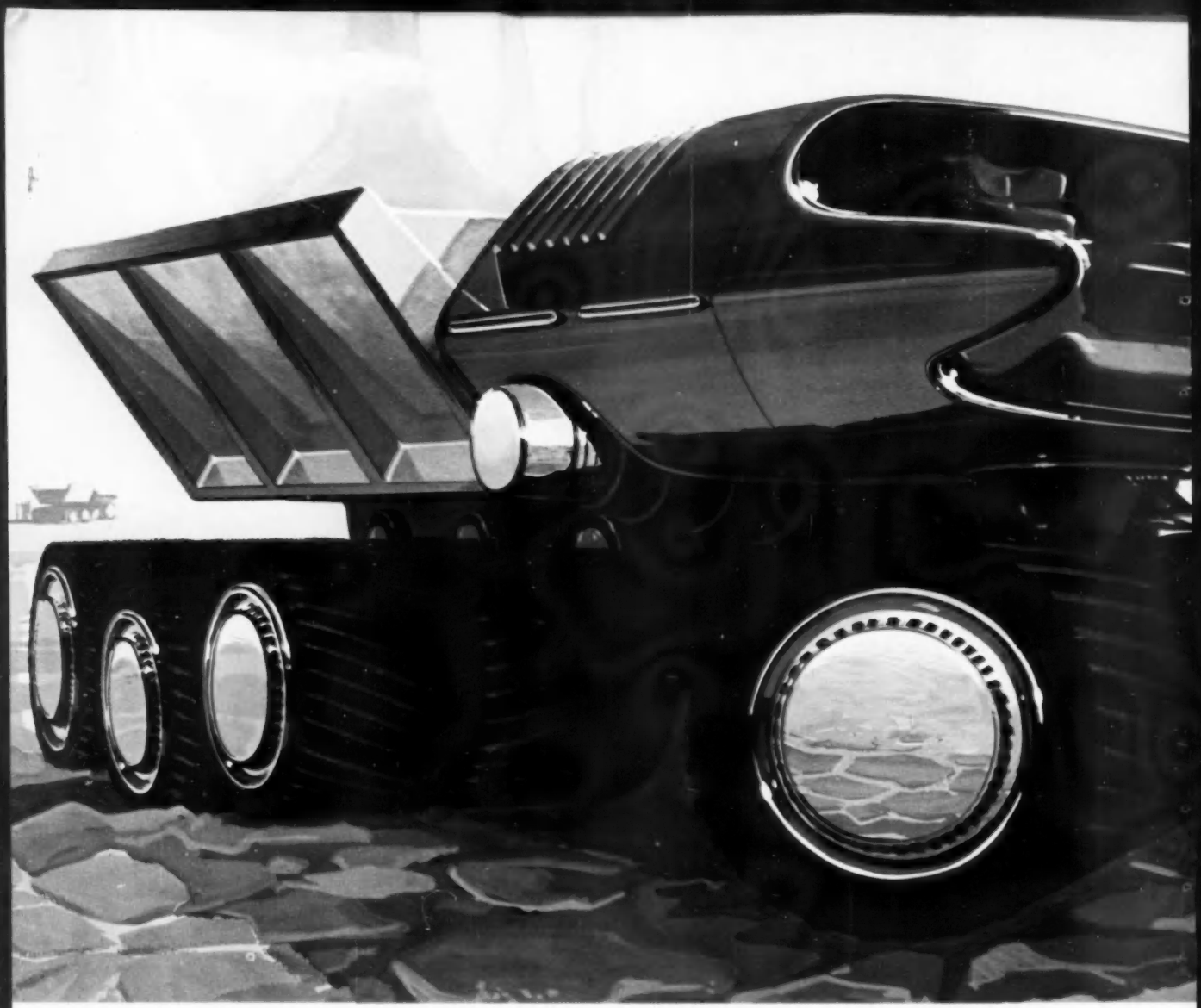
If you want to take the work out of driving, increase driver safety and truck maneuverability; if you want to get more work done *easier* and *faster* ask about Garrison power steering booster units for your specific truck!

Garrison Steering Units are available as original equipment installations on many leading makes of trucks.

GARRISON
Manufacturing Co. Inc

4609 E. Sheila Street,
Los Angeles 22, California

NEW
GARRISON G-21 SERIES
Valve and Cylinder
fulfill your power steering requirements at less cost.
ASK FOR INFORMATION!



Use strong,
rugged steels for
strong, rugged equipment

Here's how today's versatile USS Steels could keep this future carrier moving:

1. First problem: how to keep from bogging down on primitive roads. The solution is eight wheel drive, powered by individual motors built into each axle. For sure-footed traction and great maneuverability, servo controls can give instant wheel loading. The axles are under tremendous strain and torque so they're made of USS CARILLOY Steel 4150, a chrome-molybdenum alloy steel. The shock of sudden torque won't set up fatigue patterns that could cause shear failure.

2. The single beam frame is fabricated of USS "T-1" Constructional Alloy Steel to get maximum strength with minimum deadweight. "T-1" Steel has a minimum yield strength of 100,000 psi. This is a tough, strong, weldable steel that retains its toughness even at –50°F. Rutted roads won't strain this backbone; it will stay true and straight. Cradle for the power unit, built as an integral part of the frame, telescopes out for power source recharging.

Idea for a meteorite mover . . . in steel

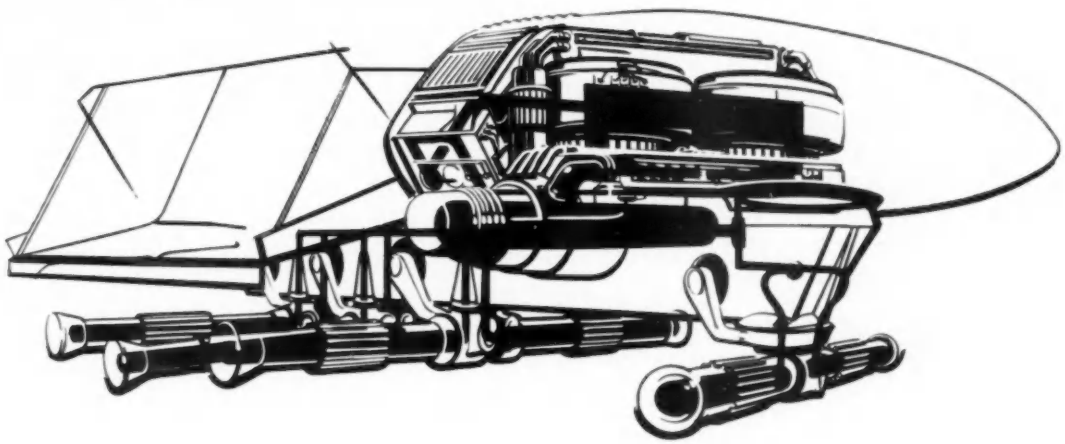
Once we start mining meteorites at the motherlode we'll need mammoth equipment like this go-anywhere ore carrier. It's built to horse loads of 100 tons or more over roadless country in any weather—and who knows what the weather's like on Venus. Steel keeps it on the go. Only steel has the strength and toughness to take the gaff.

Below are just a few of the imaginative uses of steel in this carrier of tomorrow's burdens. Today, there are over 160 different grades of steel used in passenger cars and trucks and thousands more are available. There is a steel for practically any combination of properties the engineer can dream up . . . Steels for strength, ruggedness, durability. When you want steels that will match your imagination, call United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

United States Steel Corporation • American Steel and Wire Division • Columbia-Geneva Steel Division • National Tube Division • Tennessee Coal and Iron Division • United States Steel Supply Division • United States Steel Export Company

USS

United States Steel



3. The major body and chassis components are made of USS TRI-TEN Steel, a high-strength low-alloy steel that delivers 50,000 psi minimum yield point and twice the corrosion resistance. TRI-TEN forms and welds readily so it's no problem to make the beams and channels for the dumping frame and the axle housings. At the same time, deadweight is reduced and carrying capacity is increased by using thin gage high strength steel sheets without a reduction in strength.

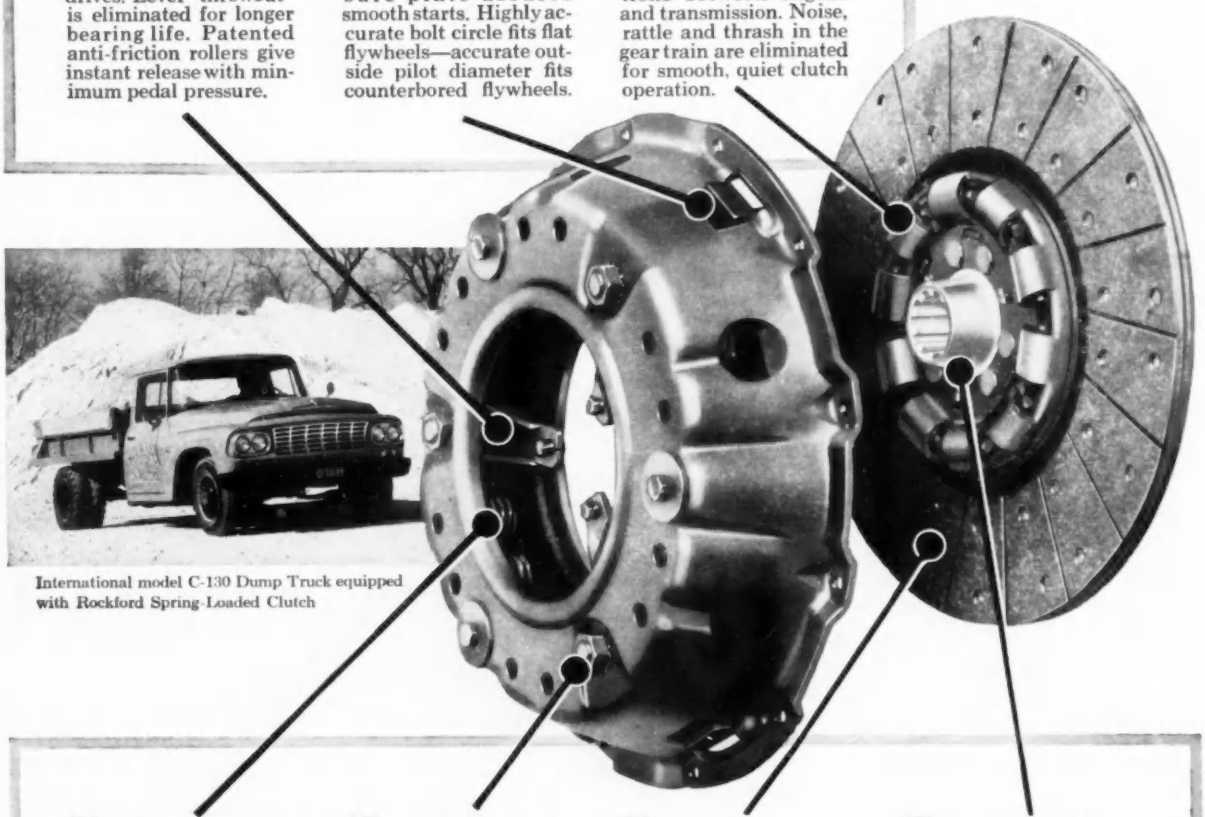
4. Deadweight is further reduced by forming the cab of USS EX-TEN Steel, a high-strength low-alloy steel. This versatile steel gives economy and high strength with a 50,000 psi minimum yield point. The liner plates of the side-dump body have the strength and wear resistance of USS "T-1" Steel. Loading and dumping 100-ton loads won't put a dent in this tough hide. USS, "T-1", CARILLOY, TRI-TEN, and EX-TEN are registered trademarks.

1 HIGH-SPEED OPERATION
Balanced release levers permit high-speed drives. Lever "throwout" is eliminated for longer bearing life. Patented anti-friction rollers give instant release with minimum pedal pressure.

2 ACCURATE FIT
Close-tolerance drive between cover and pressure plate assures smooth starts. Highly accurate bolt circle fits flat flywheels—accurate outside pilot diameter fits counterbored flywheels.

3 VIBRATION DAMPENER
Coil-spring vibration dampener absorbs vibrations between engine and transmission. Noise, rattle and thrash in the gear train are eliminated for smooth, quiet clutch operation.

ROCKFORD SPRING-LOADED CLUTCH



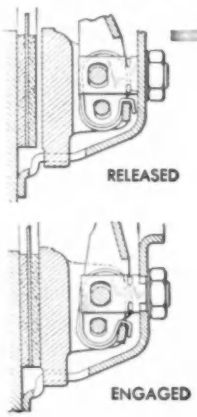
International model C-130 Dump Truck equipped with Rockford Spring-Loaded Clutch

4 HIGH-TORQUE DESIGN
Powerful engagement springs, properly spaced over the facing area, assure maximum driving contact. Compact, low-inertia design prevents gear clashing and delayed shifting.

5 SMOOTH ENGAGEMENTS
Dynamic and static balancing assures you of smooth, enduring clutch performance. Both driving and driven members are balanced to eliminate vibration.

6 HIGH-TEST FACINGS
Using only the highest quality facings, Rockford Clutches give extra-long clutch life, provide cushioned starts, reduce scoring and greatly cut costs of downtime replacement and labor.

7 PERFECT ALIGNMENT
Close-tolerance splined hub assures perfect disc alignment. Through-hardened hub gives long life. Precision manufacturing and rigid quality control eliminate chances for misalignment.



7 Good Reasons Why Idea-Men Count on Rockford Reliability

Above are seven reasons why more and more design men specify Rockford Spring-Loaded Clutches. Equally important, ROCKFORD RELIABILITY is due to 63 years of creative engineering, precision manufacturing and rigid quality control. Rockford offers complete design engineering service at no cost or obligation. You're backed by a worldwide service network. Write today for complete details on ROCKFORD RELIABILITY.

ROCKFORD CLUTCH

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Export Sales Borg-Warner International • 36 So. Wabash, Chicago, Ill.

ROCKFORD BW CLUTCH

DIVISION OF BORG-WARNER

In every field, coast to coast...
men who know their trailers
are proud to say..."it's a Dorsey!"

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A Subsidiary of The Dorsey Corporation

Dorsey Trailers and Bodies are sold and serviced by franchised distributor specialists Coast to Coast. See the Yellow Pages.

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Send literature with details on—

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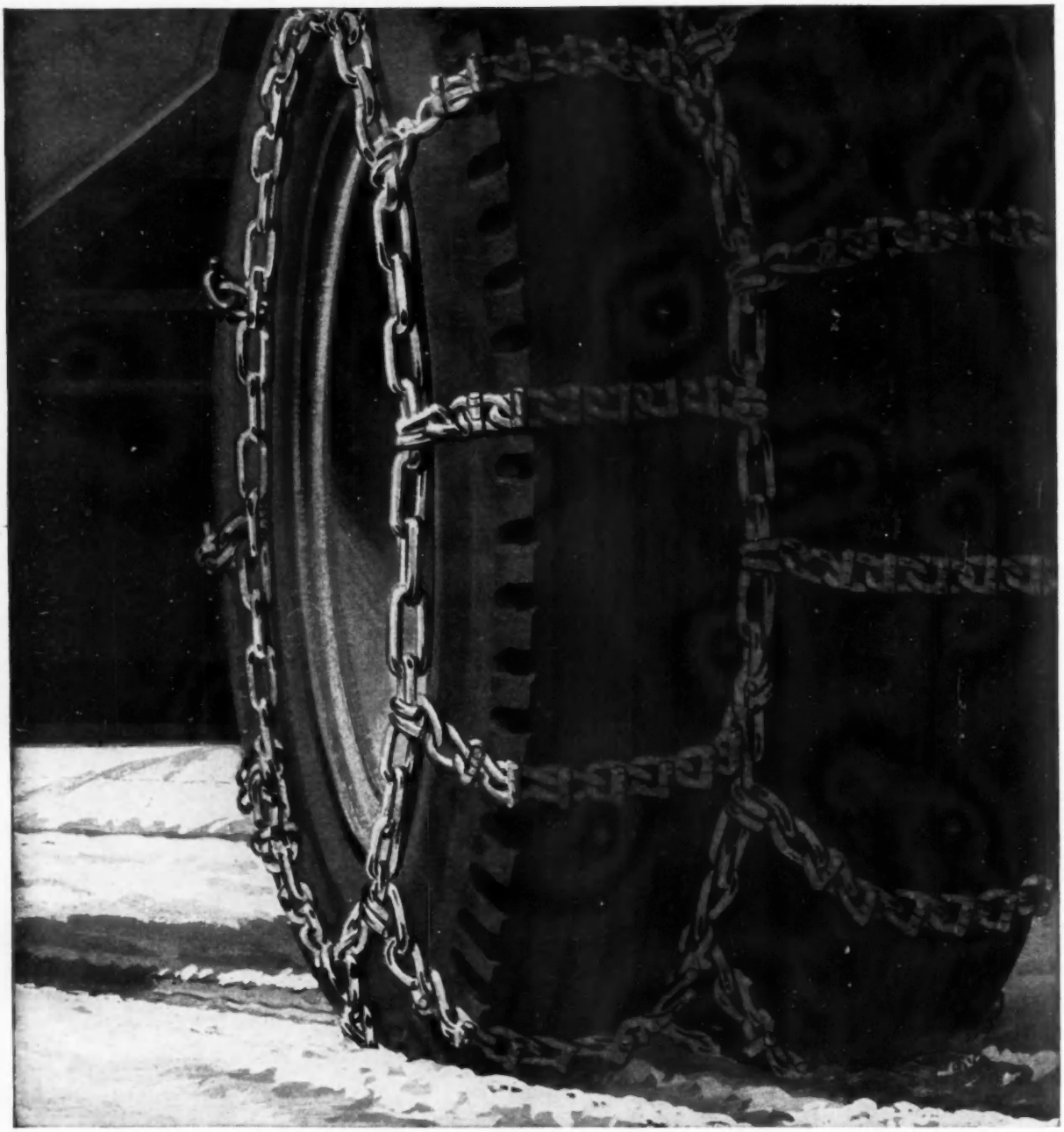


FOUL WEATHER FRIEND—FOR SAFETY AND PROFITS

National Safety Council studies prove that in winter driving nothing provides greater safety than tire chains. When you use tire chains you keep *your* fleet rolling safely and profitably. Leading fleet users have found that Campbell Lug-Reinforced chains provide extra margins in traction and chain life. You can get them from your local jobber. Call him—*soon*.

3 FACTORIES: York, Pa. — West Burlington, Iowa — Union City, Calif. — WAREHOUSES: Medford, Mass. Atlanta, Ga. — Dallas, Texas — Chicago, Ill. — Portland, Ore. — Seattle, Wash. — Los Angeles, Calif.

THE ONLY CHAIN COMPANY WITH FACTORIES & WAREHOUSES COAST-TO-COAST

CAMPBELL CHAIN COMPANY

YOU'LL DO IT BETTER • FASTER • AT LESS COST

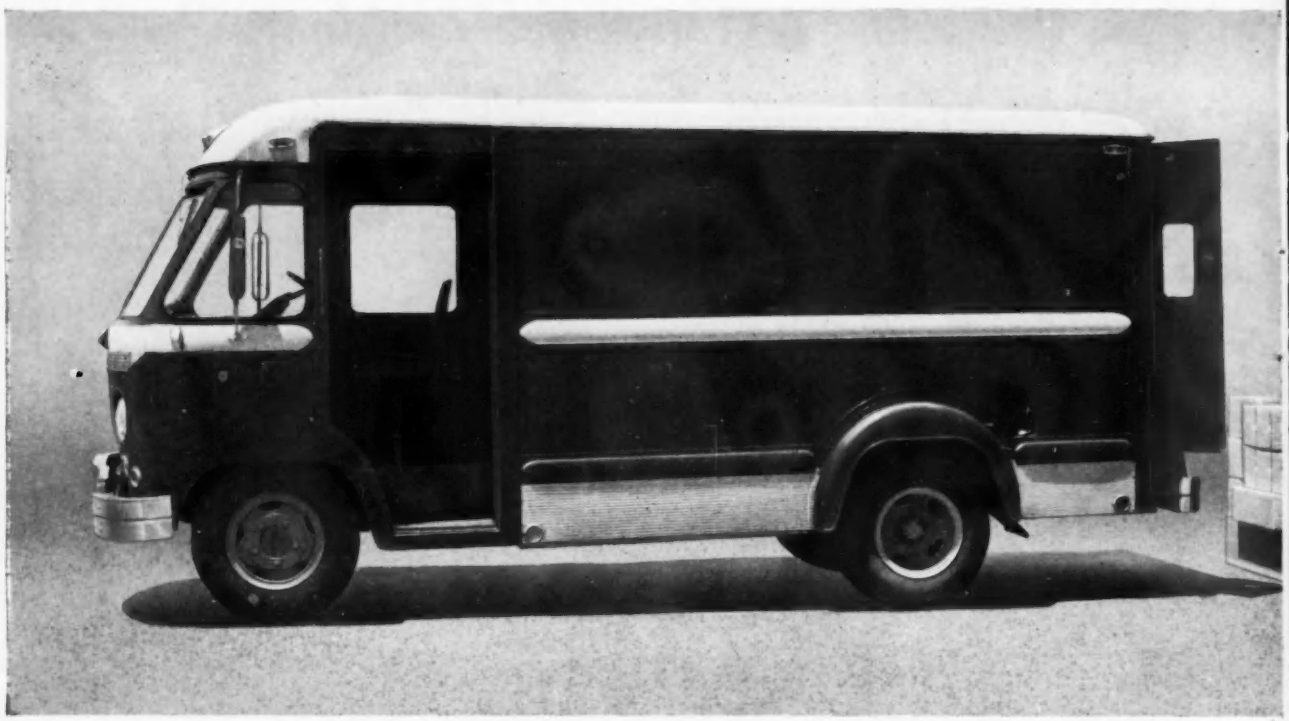
WITH A

ROSS and WHITE WASHER

For the full "Bonus Value" story, write to:

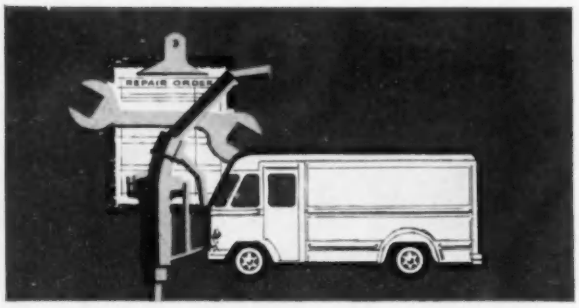
ROSS and WHITE COMPANY

50 WEST DUNDEE ROAD, WHEELING, ILLINOIS

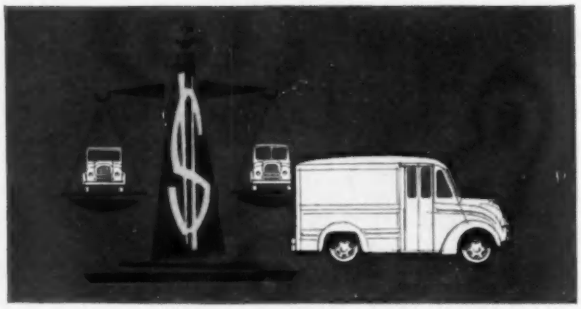


More payload per trip, more profit-stops

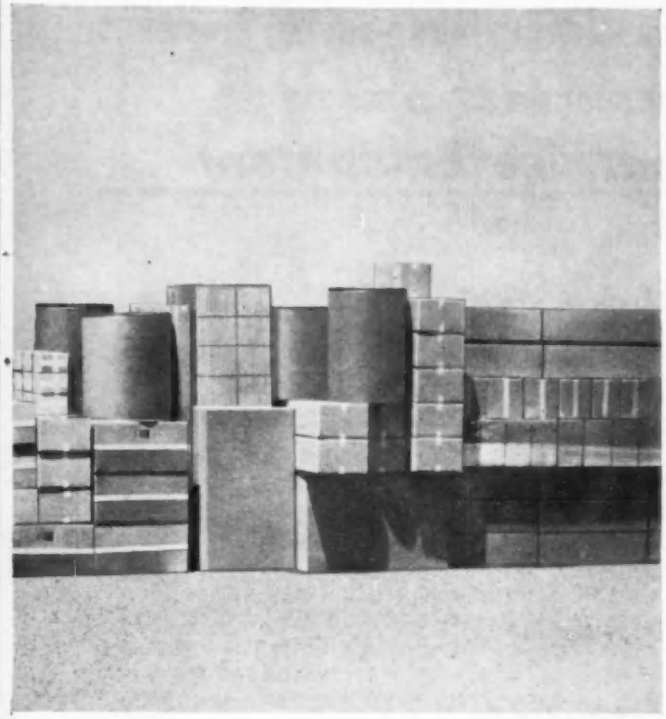
DIVCO'S SQUARED-UP DESIGN provides 15 to 25 per cent more cargo space than ordinary delivery trucks of comparable size. And DIVCO's exclusive drop-frame chassis permits low step-in, full high headroom, thus takes the stoop and struggle out of working the largest loads. Further, DIVCO's famous short wheelbase maneuverability makes driving in heavy city traffic extra easy, parking in tight spots a breeze. Any DIVCO operator will tell you this *route-designed* truck gets on the job faster, does *more* work in *less* time—for *added profit* at the end of every working day!



LOWER OPERATING COSTS=BIGGER PROFITS! Just through having the right combination of engine, axle and tire size, DIVCO can save 25 cents a day on fuel alone—an added profit of $63.75 a year of 255 working days. DIVCO saves at least 33⅓ per cent on maintenance because it's designed for easy servicing. DIVCO saves substantially on repairs because its oversize truck components are built to last twice as long!



DOUBLE YOUR TRUCK LIFE WITH DIVCO! It's significant that 76.4 per cent of all DIVCOs built since 1927 are still in service! You can be sure, therefore, that DIVCO will serve you well at least twice as long as the ordinary delivery truck. Here's a way of looking at it: If you write off your DIVCO in five years, you get an additional five or more years of sturdy service free! Then your DIVCO *really* produces profits for you!



per day!

DIVCO is a bigger value when you buy, produces more profit in your delivery operation, is worth more when you trade. That's why many of America's big delivery truck fleets are made up of rugged, efficient, route-designed DIVCOs. Just ask your DIVCO dealer and he'll be pleased to tell you the entire remarkable DIVCO savings and profit story.

AVAILABLE AT YOUR DEALER'S • New brochure presenting complete picture-story on insulated, refrigerated DIVCO trucks. • New Truck Selector Slide Chart to help you pick the truck that's just right for your load and route requirements. • Ask your dealer for both today.

ROUTE-DESIGNED FOR PROFIT-STOPS

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22000 Hoover Rd. • Detroit 5, Mich.

DIVCO-WAYNE CORPORATION

FD61-3

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Pierce Chevrolet, Inc. 3-4900

TENNESSEE—Memphis
M & M Sales BR 4-5242
Nashville
Neely Coble Co. AL 5-0564

TEXAS—Amarillo
Bruckner Truck Sales, Inc. DR 6-6273
Fort Worth
Diamond T Sales Co., Inc. ED 2-3273
Houston
Guild & Co., Inc. MI 4-1568

UTAH—Salt Lake City
Diamond T Utah, Inc. 5-7464

VIRGINIA—Richmond
Divco Virginia Sales EL 9-0744
Roanoke
Dickerson GMC, Inc. DI 5-0951

WASHINGTON—Seattle
Fageol Motors, Inc. MA 2-4460

WEST VIRGINIA—Huntington
Mueller White Truck Co. JA 2-7329
Wheeling
Bruce H. Seabright CE 3-1880

WISCONSIN—Milwaukee
August Schmidt Co. BR 1-4633

CANADA—Edmonton, Alt.
Mills Motors, Ltd. GA 2-2010
Vancouver, B.C.
Custom Trucks, Ltd. AM 6-4089
Winnipeg, Man.
Boulton Motors, Ltd. WH 3-0555
Toronto, Ont.
Divco Ontario Sales WA 1-1171
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PUERTO RICO—Bayamon
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*Parts Depot Only

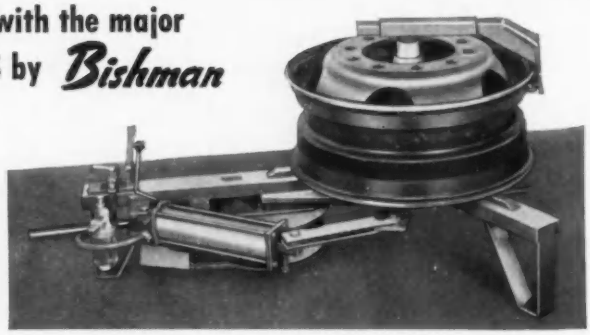
35 YEARS developing labor-saving machines has made *Bishman* the *leader in Tire Service Equipment*

Continuous development in close cooperation with the major tire manufacturers has resulted in more FIRSTS by *Bishman* in labor-saving tire service equipment than by any other manufacturer.

Bishman firsts in truck and bus tire equipment include:

FIRST power tubeless truck tire changer.
FIRST power tire changer that eliminates lifting.
FIRST air power tire spreader that the tire rolls onto without a ramp.
FIRST tester for tubeless tires that lets one man tip the tire into the tank, test it and tip it out again.
FIRST bead expander using air cylinder and Nylon belt.
FIRST hydraulic powered changer for tubed type truck and bus tires (built to U. S. Government specifications).
FIRST tire changer built to mount and demount the new Duplex Tires.

More future firsts are under development and will be available when they are required as changes in tires, wheels and rims are introduced. You can always be a Leader by using Bishman Equipment.



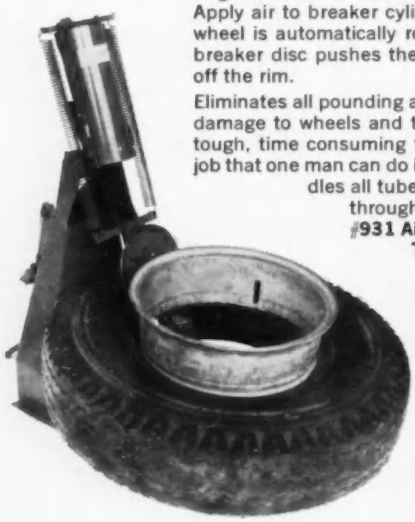
Air Power Tubeless Truck Tire Changer

19½" through 24½" Tubeless tires are simple to change on this BISHMAN floor type changer that takes all of the heavy lifting out of the job. Just lay wheel on the machine, self centering air power chuck locks it securely and air powered mount-demount tool lifts the tire off or slides it on with a touch of the control lever. **BISHMAN #932-AP Tubeless Truck Tire Changer.**

NEW... Air Power Changer for Tubed Tires

No Heavy Lifting. Just roll mounted tire to position in front of machine and lay it down. Apply air to bead breaker cylinder and break first bead. Remove retaining ring and turn wheel over on machine. Apply air to breaker cylinder again. The wheel is automatically rotated while the breaker disc pushes the tire completely off the rim.

Eliminates all pounding and possibility of damage to wheels and tires. Changes a tough, time consuming task into simple job that one man can do in minutes. Handles all tubed tires from 15" through 25". **BISHMAN #931 Air Power TRUCK TIRE CHANGER.**



TIP-IN TESTER for Tubeless Truck Tires

Any tubeless tire from passenger sizes to 12:00-24½ heavy duty are easy to test in this TIP-IN tank. Mounted tire rolls onto tire handler built onto front and one man tips it into the tank. Handle at top rotates tire while operator checks for leaks in tire, air seals, rim or valve. Water stays clear to make it easy to spot the smallest leaks. Also handles tubes up to 50" diameter. **BISHMAN #934 Tip-In Tester.**

Low Level Tire Spreaders

No lifting—No rolling up ramps. One man can roll any tire through 14:00-20 ply onto this spreader, spread the tire and inspect it alone.

Foot controls leave both hands free to handle the tire. Tire rests on rollers that make it easy to rotate the tire and slide with it as it is spread and released to keep it upright. BISHMAN #427, Giant Type handles all tires through 14:00-20 ply. BISHMAN #428, Truck Type handles tires through 12:00-12 ply.

Other BISHMAN Equipment for truck and bus tires includes Air Power Bead Expanders, Electric Vulcanizers, Rub-Er-Slide Tire Lubricant, E-Z OFF Rim Protective Compound, Bead Breakers and Tube Dunkers.

Ask your equipment distributor for details or write for complete, illustrated catalog.

Bishman **MFG. CO.**
Route 2, OSSEO, MINNESOTA.

LEADERSHIP Thru the Century

HENDRICKSON Mfg. Co. ®

Mr. M. Hendrickson began designing and building motor trucks and automobiles at the turn of the century. The friction-drive truck at right was built in 1907.

For many years the Hendrickson organization has been headed by the four Hendrickson brothers. Now aided by the third generation, Hendrickson has maintained leadership in the automotive industry by strict adherence to the highest standards of reliability and performance.

MOTOR TRUCK DIVISION

This COE tilt-cab truck was built by M. Hendrickson in 1912, for a Boston dealer.

Quite different in appearance, size, and performance from its 1912 predecessor, this 1961 Hendrickson COE Tractor incorporates the newest adaptations of tested designs.

SPECIAL EQUIPMENT DIVISION

This 1927 Hendrickson custom-built Crane Carrier was designed for a 7½-ton crane.

Current Crane Carriers are manufactured for cranes from 10-ton to over 60-ton capacities.

TANDEM DIVISION

This first practical tandem axle suspension, designed and built by Hendrickson in 1926, featured parallelogram design and the exclusive below-axle walking beam.

Modern Hendrickson Tandem Suspensions are available with Steel Spring, Rubber Load Cushion, and Air Ride springing media. Equalizing beams distribute loads evenly to both axles and reduce the effects of road irregularities 50%; torque rods and rubber bushings absorb starting and braking torque and eliminate maintenance; vertical drive pins leave the springs free to perform the sole function of cushioning the load.

HENDRICKSON Manufacturing Company, Lyons, Illinois

For any engine (including aluminum) Allied gives you the right insert!

● In your business, there's only *one* right valve seat insert for an engine . . . the one that exactly matches original equipment specifications for material.

That's why Allied supplies inserts in all *four* materials commonly used in original equipment. In short, you can duplicate the inserts you're replacing . . . with Allied.

The full-coverage Allied insert line already has been expanded to include inserts made of chrome nickel alloy and designed for use in aluminum engines . . . as well as inserts in chrome cobalt alloy, chrome molybdenum alloy and molybdenum alloy.

Each Allied insert is produced from an individual casting to guarantee perfect fit and uniform grain structure . . . two Allied assets that will show up in your service records as a dividend of longer, better service.

In short, don't gamble by compromising on valve seat insert materials. Match the material you're replacing . . . with Allied.

ALLIED AUTOMOTIVE PARTS COMPANY
INDIANAPOLIS 7, INDIANA

Allied
ENGINE & CHASSIS PARTS
"the complete coverage line"

N·A·P·A
Assurance of Quality

MY, HOW THINGS HAVE CHANGED SINCE 1911!

Many good things have happened to the automotive industry—and to Stewart-Warner, too, in the past 50 years. One of them has been the growth and progress of the Alemite Division.

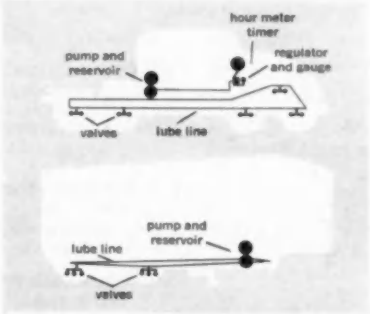
Just shortly after the development of the Stewart-Warner speedometer came the birth of modern high pressure lubrication with the Alemite fitting . . . first used on U.S. Army trucks sent to France during World War I.

Both were revolutionary advances in the automotive industry. Since then Alemite has been at the forefront in developing and supplying fleet maintenance equipment. This includes:

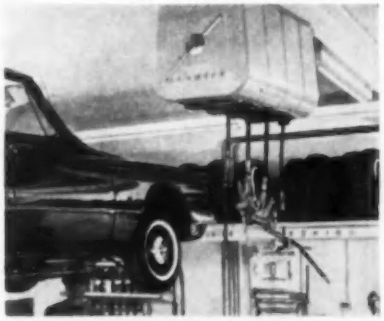
ALEMITE PORTABLE TRUCK WHEEL BALANCER
Balances the entire wheel assembly of huge semis or small compacts right on the vehicle. Does the complete job, up-and-down and side-to-side. No installation required . . . operates anywhere.

ALEMITE SPRAY-KLEEN WASHING SYSTEM
Easy-to-use, low-cost, high-pressure system. No installation required . . . all you need is the Spray-Kleen equipment and a drain. Anyone can operate it . . . does sparkling work.

SURGEPRUF COUPLINGS AND HOSE ASSEMBLIES
For on-the-spot hose replacements of fuel, oil, air vacuum, and power steering return lines right in your own shop without a big inventory. Cuts service costs while it boosts fleet profits.



ALEMITE CENTRALIZED LUBRICATION SYSTEMS
Gives tractors and trailers full-time lubrication protection, automatically, while they're on the road. Cuts wear, repair, maintenance downtime. Keeps vehicles at full earning capacity.



ALEMITE FLEET LUBRICATION EQUIPMENT
Pumps, reels, guns, hoses, lifts . . . everything required to custom-tailor your service department to fit your needs . . . to keep your fleet operating at peak efficiency and lowest cost.

For further information on Alemite Fleet Service equipment, contact your local distributor, or write:

Symbol of SW Excellence

ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

Dept. DG-1, 1850 Diversey Parkway, Chicago 14, Ill.

the extra *Margin of Safety for truck & bus

. . . MAXIBRAKE!

(the automatic spring-applied safety brake)

MAXIBRAKE mounts in place of the original service chamber quickly and inexpensively (no welding or additional linkage required). It is permanent, human-proof and will last the lifetime of your vehicle.

MAXIBRAKE Safety Chambers are Fail-Safe — over 1,000,000 miles of road testing with no failure, no service required!

MAXIBRAKE meets I.C.C. and other brake safety regulations. It has been tested and approved by highway regulatory bodies, has been established as standard equipment by major truck and bus manufacturers.

The new California law makes it mandatory to equip all vehicles using compressed air for actuating brakes with a safety device which will, upon loss of air pressure, automatically apply the brakes. Massachusetts follows this precedent with legislation which actually names MAXIBRAKE as the standard for such a device!

MAXIBRAKE means greater driver confidence, the lowest cost extra insurance you can buy, more rolling time — less down time!

- **AUTOMATIC, POSITIVE MECHANICAL APPLICATION OF BRAKE WHEN NORMAL AIR SUPPLY GOES OUT**
  brings vehicle to a safe, smooth stop!
- **RUNNING OR STANDING "NO-GO" BRAKES**
  will not allow vehicle to move if system air pressure is inadequate!
- **PARKING BRAKE**
  sets brake immovably—on steepest incline with simple hand valve control in cab (No risk of dangerous, costly runaways!)

There is a model to fit your rig's requirements

Consult your Dealer or write the Factory for complete information

* THE BIG **MAXIBRAKE, INC.**

41 S. De Lacey Avenue · Pasadena, California

8 NEW REOMATICS INCREASE FEUER FLEET TO 100 REO TRUCKS

Feuer Transportation, Inc. delivers 3 million pounds of freight a day in and around heavily congested New York City. It takes a tough, dependable truck to meet the rigid time schedules. That's why Feuer has a fleet of 100 Reos. Recently, Feuer added 8 new Reos . . . *powered* by famous ***Gold Comet*** engines that go the life of the truck without cylinder reboring or block replacement . . . *equipped* with fully proved, fully automatic ***ReoMatic transmissions*** to prevent harmful engine lugging, eliminate gearshift guesswork and power interruptions. Ray Ebert, Feuer General Manager, says: "We're sure our ***ReoMatics*** will speed up delivery schedules—especially in heavy traffic conditions. We expect to cut downtime and maintenance costs, too." Get the full story on the Reo that's right for your job.

REO MOTOR TRUCK DIVISION • THE WHITE MOTOR COMPANY, LANSING 20, MICHIGAN

Twenty-five years of engineering experience go into the production of every Evans heater. They're tailored to truck manufacturer specifications . . . custom-engineered to provide the right BTU rating and proper heat distribution *for your specific truck models* . . . and they're designed for quick, easy maintenance!

Backing each Evans heater is a one-year/50,000-mile warranty.

Hallmark of Quality Products...

EVANS PRODUCTS COMPANY
PLYMOUTH, MICHIGAN
HEATING AND VENTILATING DIVISION

REGIONAL REPRESENTATIVES: Chicago, R. A. Lennox • Detroit, Chas. F. Murray Sales Co. • Allentown, Pa., P. R. Weidner

DU PONT DULUX®

MAINTAINS FRESHNESS ON BAKERY TRUCKS

HOLDS GRADE-A APPEARANCE ON MILK TRUCKS

KEEPS SPARKLE ON BOTTLING TRUCKS

The protection and eye appeal provided by a gleaming truck finish are under constant attack by the hard knocks of open-road travel and the everyday exposure to harsh sunlight, rain and dew. That's why leading truck owners choose Du Pont "Dulux" Enamel.

Rugged "Dulux" is really made to take it. It stands up to day-in, day-out service, year after year . . . snaps back clean and bright after every washdown. That's because "Dulux" gives a higher initial gloss, holds its color longer. And "Dulux" resists chipping and cracking because it is not only tough, but flexible.

"Dulux" pays off in reduced maintenance costs, too. It extends painting cycles plenty. It is easy to apply . . . flows out smooth and covers well . . . dries fast . . . has excellent durability.

Remember, when you use "Dulux" on your fleet, you can *count on* the experience of the world's greatest paint laboratory. Specify "Dulux" next time you order enamel and be sure to follow the "Dulux" system of recommended products and procedures for the best possible results on every job.

DU PONT REFINISHING MATERIALS Du Pont research leads refinish progress

DU PONT
Better Things for Better Living through Chemistry

"MY NEW 1913 KELLY IS THE BEST INVESTMENT I EVER MADE"

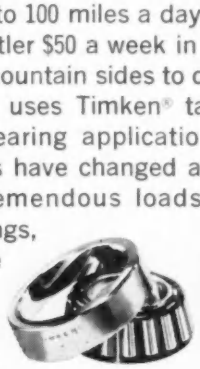
says New York Bottler

4 cylinders, 3¾" bore, 5¼" stroke; water-cooled, cellular radiator; 3-speed transmission; wheel base, 120"; 25 horsepower at 1200 RPM; 15 miles per hour, governor controlled; Timken bearing equipped; price $2,060.

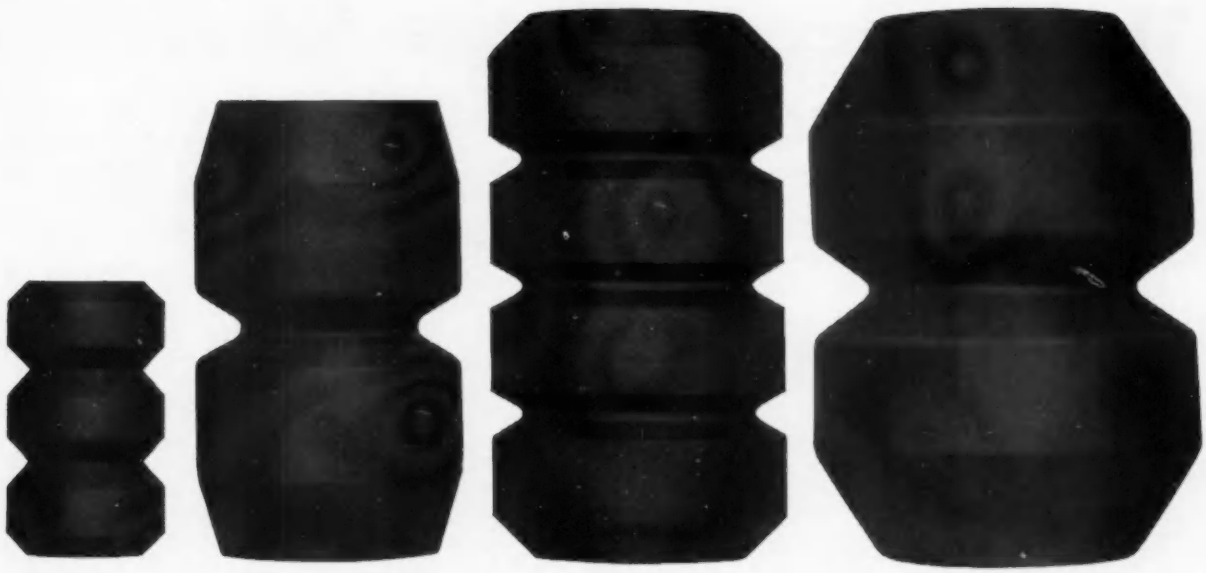
COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

Everything's changed but the name on the bearings

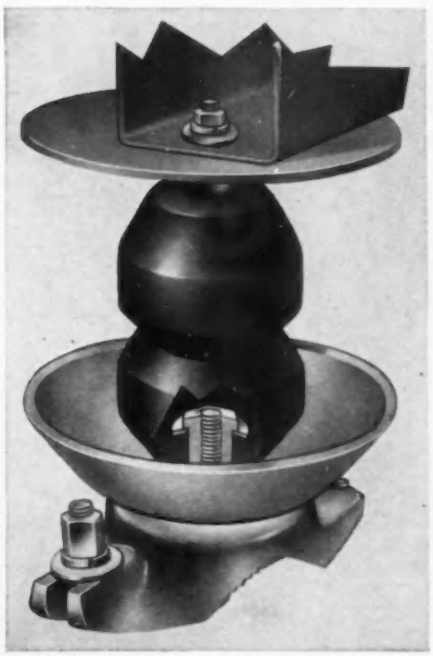
In sparkling colors and gold leaf, the new 1913 Kelly rolled 75 to 100 miles a day with its load of ginger ale. It did the work of four teams and wagons, saving the bottler $50 a week in livery and hotel costs. ■ Today trucks do everything from whisking giant logs down mountain sides to delivering your wedding cake—one good reason why every American make of truck uses Timken® tapered roller bearings. We've worked with truck makers since 1906, designing bearing applications for wheels, transmissions, drive axles and steering gears. ■ And the bearings have changed as much as the trucks. They're smaller, yet capacity-packed to take today's tremendous loads and higher speeds. And because we've learned a thing or two about making bearings, truck fleets pay less for more bearing life than twenty-five years ago. ■ When you buy trucks, do what the top fleets do. Specify Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Also makers of fine alloy steel and rock bits.



TIMKEN®
TAPERED ROLLER BEARINGS • *Since 1899*



NEW! MOOG HOLLOW AEON RUBBER OVERLOAD SPRINGS . . . Boost payload capacity ◦ Adapt automatically to any load ◦ One to fit every type of vehicle ◦ Maintenance-free



Practically every fleet owner can increase payload capacity and cut operating and maintenance costs with the new MOOG Hollow Rubber Spring. Not an air bag or spacer . . . but a totally different concept in overload design, proven in use the world over.

The spring itself, made entirely of rubber, is specially calibrated to provide increasing support as load is increased. Has no affect on unloaded ride . . . yet won't bottom under extreme overloads. Provides the smoothest ride possible under *every* type of load, lengthening life of other parts. Acts as a stabilizer to prevent sway and roll on curves. Remarkably long life; absolutely quiet operation; quick, foolproof installation on front or rear applications.

Stock sizes accommodate passenger cars and light trucks, but special units fit everything from golf carts to the heaviest earthmoving equipment. Describe your vehicle and we'll show you how a MOOG Hollow Rubber Spring can lower your fleet costs! Write today . . . no obligation.

Write for FREE booklet explaining in detail the 11 advantages of the MOOG Hollow Rubber Spring.

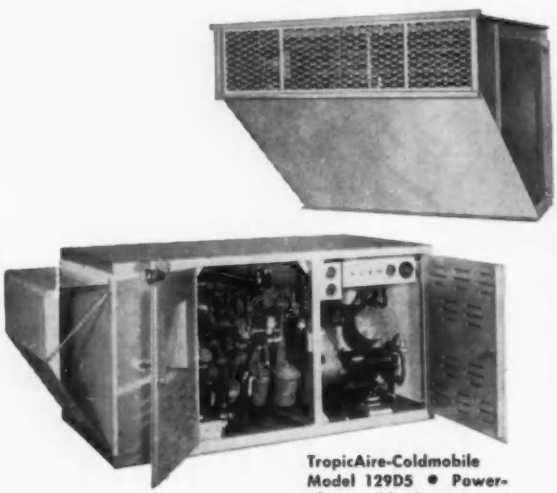
MOOG
UNDER-CAR PARTS

MOOG INDUSTRIES, INC., St. Louis 33, Mo.

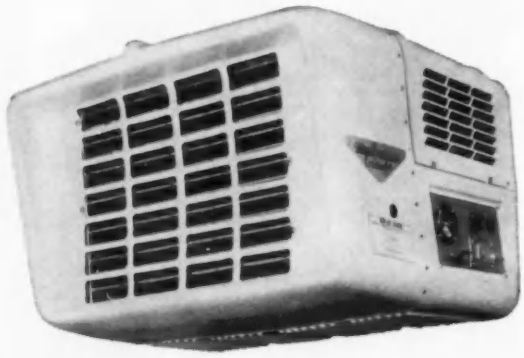
SPECIALISTS IN AUTOMOTIVE SUSPENSION SINCE 1919

The Reefer to Fit the Job...

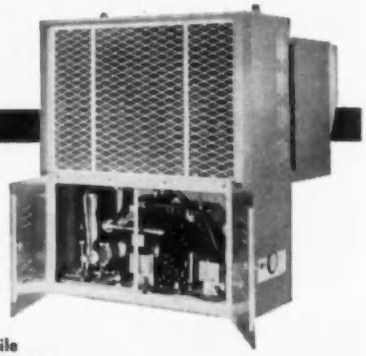
There's a TropicAire-Coldmobile refrigeration unit designed to meet every kind of transport cooling requirement. Whether your fleet demands gasoline, diesel or electric power, TropicAire meets the need. If you carry exclusively low-temperature cargo, TropicAire offers several models with capacities to −20° F., such Models as 91G5, 91G8, 129D5, 129D8, and ME-50. Models ME 20, ME30, BN, BNE and the 1300 Series are designed for higher temperature operation. Let us estimate *your* refrigeration requirements... and fit the reefer to the job.



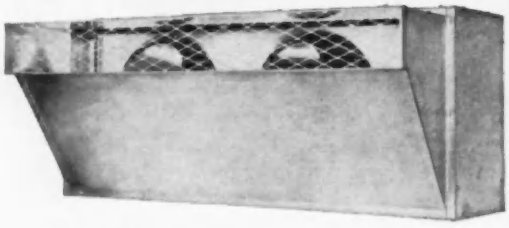
TropicAire-Coldmobile Model 129D5 • Powerplant with Evaporator-blower Section



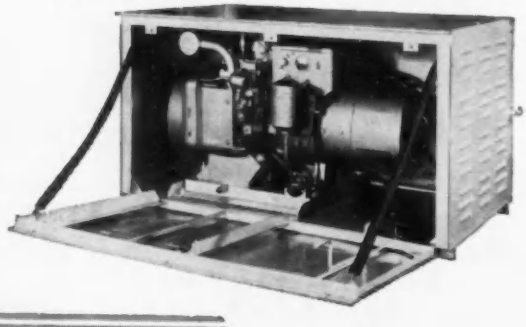
TropicAire-Coldmobile 1300 Series Models



TropicAire-Coldmobile Models ME-20, ME-30, ME-50 Powerplant-Generator with Compressor-Evaporator-Blower Section



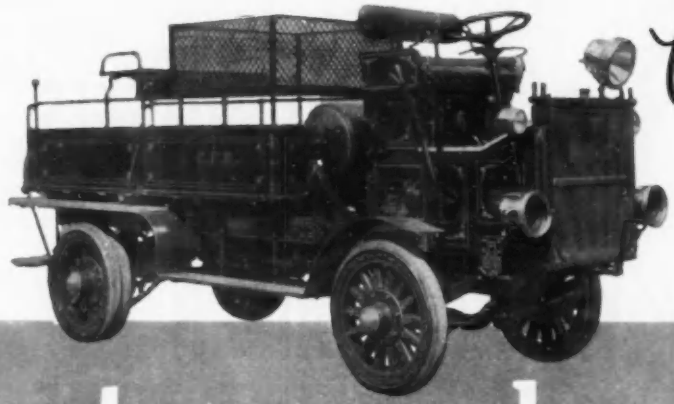
TropicAire-Coldmobile Model 91G8 • Powerplant with Evaporator-blower Section



TROPICAIRE Coldmobile

McGraw-Edison Company
Transportation Cooling Division
5201 W. 65th Street
Chicago 38, Illinois

McGRAW EDISON



for over fifty years

In 1908—the CHICAGO FIRE DEPT. —then as now—was up-to-the-minute with Waukesha Engine powered equipment.

fast · rugged · powerful

WAUKESHA *transport* ENGINES

Where the pay-off is on pay-load — in fast cross country service . . . off the highway . . . or extra heavy duty hauling — you'll make more miles and cut costs, too, with these modern Waukesha truckers' engines. Designed to put out the power, Waukeshas pull-and-pay day after day without faltering or breakdown. Up to 400 horsepower.

Send for Bulletins

WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.
New York • Tulsa • Huntington Park, Calif.

◀ 135-DKB Diesel, 4¼ x 5 inch bore and stroke, 426 cu. in. displacement, to 145 hp.

145-GZ Gasoline, 5⅜ x 6 inch bore and stroke, 817 cu. in. displacement, to 300 hp. ▶

ORIGINAL EQUIPMENT MANUFACTURERS
O.E.M.
APPROVED

RIMS AND WHEELS FOR EVERY TRUCK, TRAILER AND BUS COME FROM FIRESTONE

Firestone steel rims and wheels are approved by every leading vehicle manufacturer! That means you can order the world's roundest, truest rims and wheels for every new truck, trailer or bus you buy. And here's why they'll cut your rolling costs:

perfectly balanced ACCU-RIDE® WHEELS AND RIMS

- **ROLL TRUER • CUT WHEEL BOUNCE AND WOBBLE**
- **GIVE EXTRA TIRE MILES • PROTECT TIRES**
- **PROVIDE EXTRA STRENGTH**
- **SEAL OUT RUST AND CORROSION • BOOST PAYLOADS**

ACCU-RIDE WHEELS CUT WHEEL BOUNCE AND WOBBLE AND GIVE EXTRA TIRE MILES BECAUSE THEY RUN TRUE.

Firestone

STEEL PRODUCTS COMPANY • AKRON 1, OHIO

INTEGRITY, QUALITY, ACCURACY, DEPENDABILITY

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Buffalo 3—Frey, The Wheelman, Inc.

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Raleigh—Carolina Rim & Wheel Co.
Winston-Salem—United Automotive Service

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Fargo—Pioneer Rim & Wheel Co.

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OREG.— Portland 14—*Six Robblees', Inc.

PA.— Altoona—Wheel & Rim Sales Co.
Harrisburg—Standard Wheel & Rim Co.
Lancaster—Standard Wheel & Rim Co.
Philadelphia 4—Kay Wheel Sales Company
Philadelphia—Kay Wheel Sales Company
Pittsburgh 1—Wheel & Rim Sales Company

R. I.— Providence 3—New England Wheel & Rim Co.

TENN.— Knoxville 20—*John A. Harris & Son, Inc.
Knoxville—Wheels & Brakes, Inc.
Memphis 3—Beller Wheel, Brake & Supply
Nashville 3—Beller Wheel, Brake & Supply

TEXAS— Dallas 2—Southwest Wheel & Mfg. Co.
El Paso—Southwest Wheel & Mfg. Co.
Houston 2—Southwest Wheel & Mfg. Co.
Lubbock—Southwest Wheel & Mfg. Co.
San Antonio 2—Southwest Wheel & Mfg. Co.

UTAH— Salt Lake City 11—*Henderson Rim & Wheel Serv.

UTAH— Salt Lake City 1—Bailey, Incorporated

VA.— Richmond 20—Dixie Wheel Company

WASH.— Seattle 99—Motor Wheel & Parts Co., Inc.
Seattle 24—*Six Robblees', Inc.
Spokane—*Bearing & Rim Supply Co.
Spokane 1—Northwest Wheel, Inc.
Tacoma 3—*Six Robblees', Inc.

WISC.— Milwaukee 8—Wisconsin Wheel & Rim, Inc.

CANADIAN DISTRIBUTORS

ALTA.— Edmonton—Alberta Wheel Distrib., Ltd.
Edmonton—Clark's Service Garage
Calgary—Fisk Tire Service Co., Ltd.

B. C.— Vancouver 10—Wheels & Equip., Ltd.

MAN.— Winnipeg—Fort Garry Tire & Service Co.

ONT.— Toronto 1—Harpham Brothers

QUE.— Montreal 34—Auto Wheel & Supplies, Ltd.
Limoilou—Palmar Automotive, Ltd.

SASK.— Regina—Brakes & Wheels, Ltd.

*Rim distributor only.

After 54 years of successfully serving the dynamic trucking industry, INTERNATIONAL HARVESTER looks forward to even greater advances in the future

1907

Built for the job. Grandpa drove this high-wheeler, specially designed for rutted, muddy, farm-to-market roads. The Auto Wagon, first INTERNATIONAL truck, had a 20 hp engine with 2-cylinder 4-cycle design. Top recommended speed – 20 mph.

1937

Built for the job. The well-known "D-Line" trucks were produced starting in 1937 at the company's Springfield, Ohio and Ft. Wayne plants. With up-to-date styling and characteristically functional INTERNATIONAL design, they helped usher in the modern era in trucking. In 1937 over 100,000 INTERNATIONAL Trucks were produced, a new high in yearly production.

1947

Built for the job. Another advance in INTERNATIONAL heavy-duty engineering was made in 1947 with the introduction of the popular KB models. These post World War II trucks played a major part in the booming transportation expansion of the late 40's and through the 50's. By now INTERNATIONAL was manufacturing trucks with GVW weights up to 90,000 lbs.

1917 1927

Built for the job. Designed for greater speed and load capacity, this "low-wheeled" 1917 stake truck featured the radiator behind the engine. It was the first truck to scale Pike's Peak and also saw service in France during World War I.

Built for the job. INTERNATIONAL "speed" trucks were introduced in the 20's to keep pace with the tremendous road-development progress of that expanding era. This typical model featured pneumatic tires, powerful 6-cyl. engine and lower silhouette.

1961 BUILT FOR THE JOB

Today INTERNATIONAL over-the-highway trucks are a byword in the industry for lighter weight, bigger payloads, lower operating costs. The cab-over-engine model shown here, from the popular DCO-405 Series, has a super-lightweight cab combined with a powerful V-type diesel engine

And so, for 54 years, from the pioneer Auto Wagon to the modern trucks of 1961, INTERNATIONAL has been dedicated to knowing and meeting the needs of the trucking industry. We will continue to do so in the future. International Harvester Company, 180 N. Michigan Ave., Chicago, Ill.

INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE IH®

CENTER LINE STEER

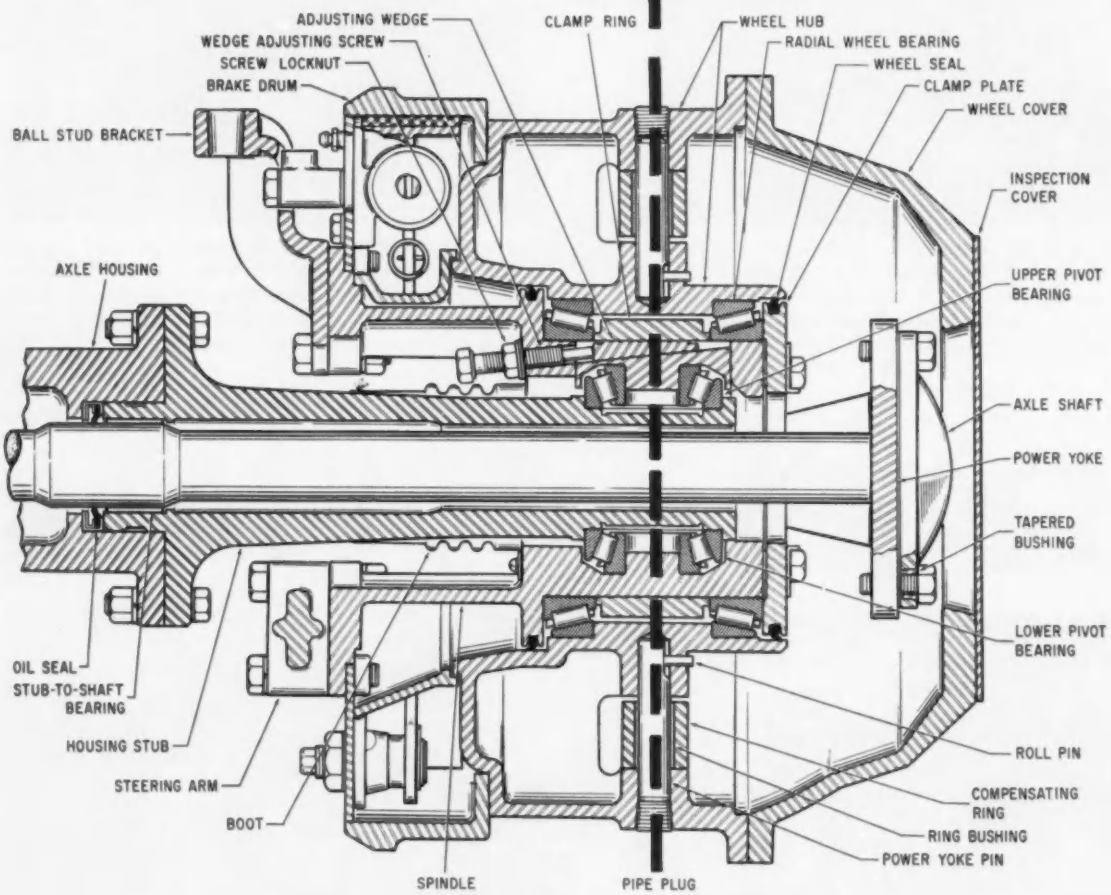
on

FRONT DRIVING AXLES

by

Coleman

35% LESS STEERING EFFORT ↑ 36% GREATER STEERING STABILITY



SECTIONAL VIEW OF COLEMAN MODEL 9 FRONT AXLE DRIVE WHEEL
Illustration has hydraulic brakes, equipped with covers for disc wheels

According to tests, as reported to the Society of Automotive Engineers, "center point steering registered approximately 35% less turning effort" and 36% better control in event of a blowout than conventional type steering. This also means less stress on steering parts and less driver fatigue. An exclusive Coleman feature for 40 years.

Many models and sizes for all makes of trucks of 14,000 GVW or larger.

SPECIFY COLEMAN FRONT DRIVE AXLES AND TRANSFER CASES FOR LONGER LIFE, LOWER MAINTENANCE COSTS AND LESS DOWN-TIME

THE AMERICAN *Coleman* COMPANY

LITTLETON, COLORADO
(A Denver Suburb)

P. O. Box 72 **PYramid 4-1561**

TEAR OUT AND SAVE

POWER REASONS

WHY GMCs ARE THE MOST ADVANCED TRUCKS IN 20 YEARS!

FROM ½-TON TO 60-TON
GENERAL MOTORS LEADS THE WAY!

GMC
GENERAL MOTORS CORPORATION
TRUCKS

ANOTHER TRUCK TRIUMPH OF THE 60's!

PULL HERE

TEAR OUT AND SAVE

POWER REASONS

WHY GMCs ARE THE MOST ADVANCED TRUCKS IN 20 YEARS!

FROM ½-TON TO 60-TON
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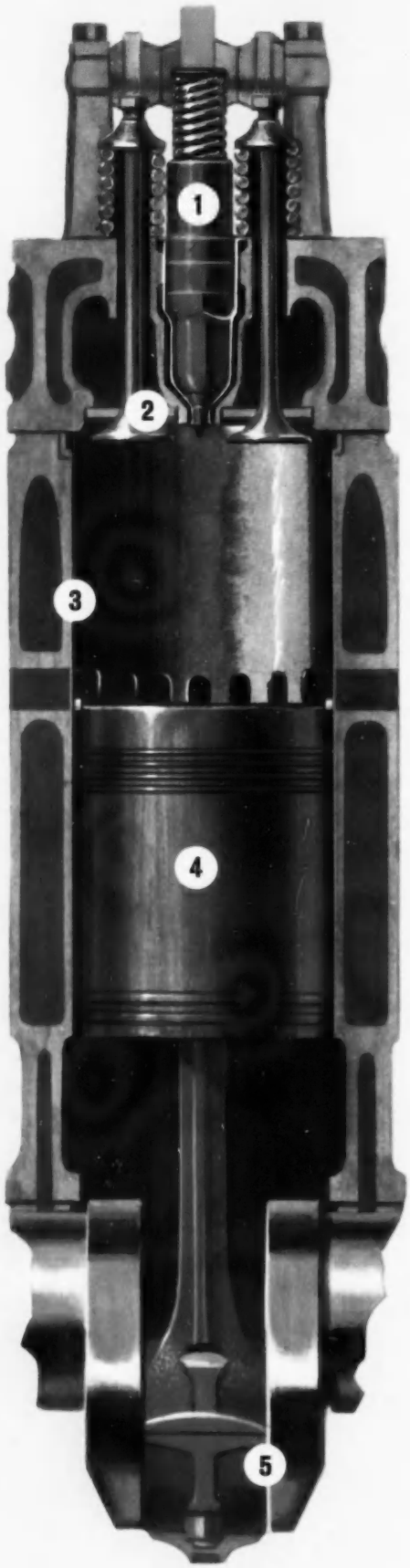
ANOTHER TRUCK TRIUMPH OF THE 60's!



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Morai
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fillets

SHORTEST, LIGHTEST AND LEAST EXPENSIVE

GMC DI

You get rugged, com
tion . . . many inches s
inside cab room, sir
and full advantage
dimensions—lightest
530 pounds less, to c
loads—two-cycle des
acceleration, smoothe
tional fuel economy

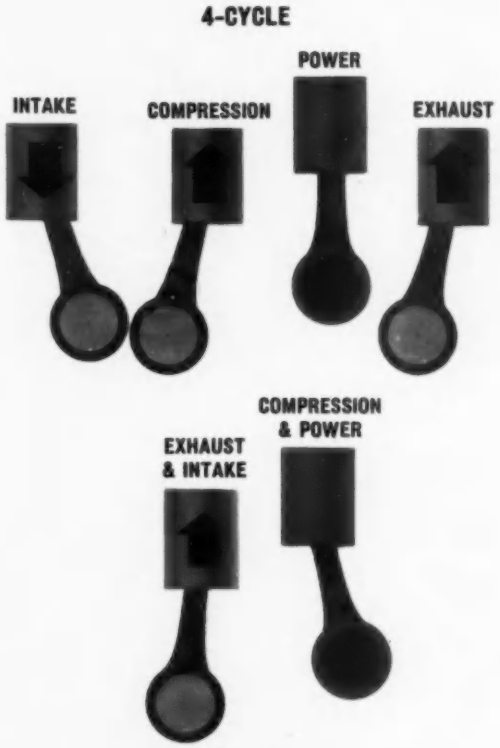
Simplest, most-durable fuel system of all. Each GMC injector easures the exact amount of fuel eded for speed and load; builds up high essure; atomizes the injected fuel for st, smooth and complete burning...all a single operation. There is no need r complicated pumps and troublesome gh-pressure lines.

Better breathing and more complete venting of exhaust gases with ur exhaust valves (not just 1 or 2). You t cooler operation for longer valve and gine life...more power from the same nount of fuel.

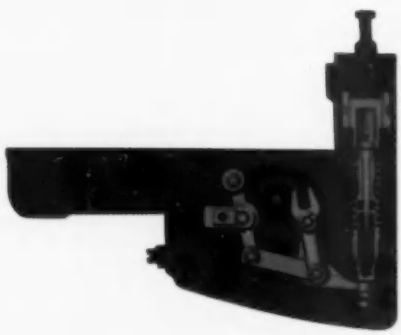
Leak-proof, dry-type cylinder liners maintain even temperature om top to bottom for minimum distorion. Servicing is made faster and easier.

Long-life, malleable iron pistons are built to withstand even excesve heat and pressure. "Fire ring" design lps keep uniform temperature in the mbustion chamber for improved effiency on less fuel, particularly under eavy load.

Bearings outlast others. All connecting rod and main bearings are oraine M400. Tocco-hardened crankhaft has large journal overlap and rolled illets to resist damaging bending fatigue.

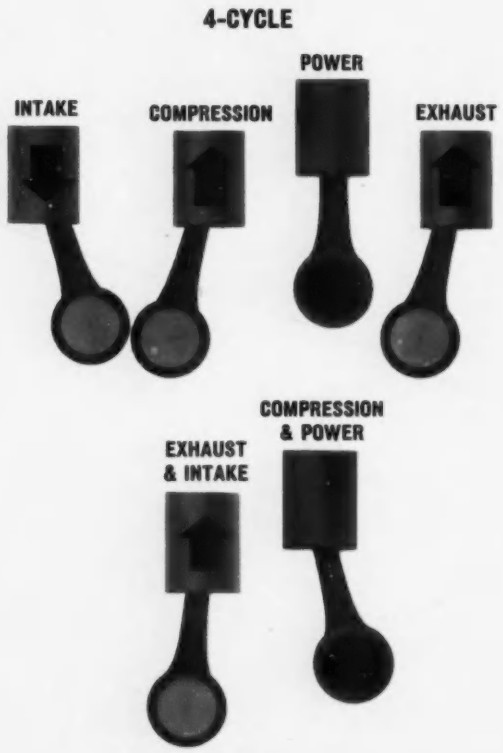


Get 100% more power strokes per crankshaft revolution. With GMC's 2-cycle design, every time the piston goes down, power goes to work. There are no wasted strokes and idle lags. You get higher torque output at all engine speeds . . . get your loads moving faster and smoother.



Exclusive economy range governor. Only GMC Truck diesel engines have this economy range governor that positively and accurately regulates engine cruising speeds at the most efficient rpm for top fuel economy and longer engine life. Standard equipment on V-6 4-wheel models.

HTEST AND LEAST EXPENSIVE TO OWN—IN GMC DIESELS



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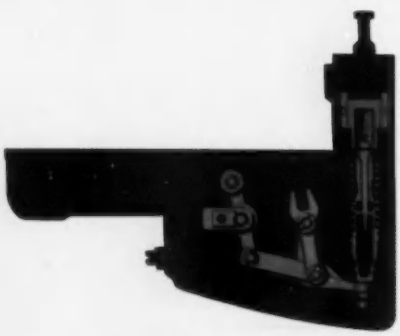


Exclusive economy range governor. Only GMC Truck diesel engines have this economy range governor that positively and accurately regulates engine cruising speeds at the most efficient rpm for top fuel economy and longer engine life. Standard equipment on V-6 4-wheel models.

You get rugged, compact construction . . . many inches shorter for more inside cab room, simpler servicing and full advantage of short BBC dimensions—lightest weight, up to 530 pounds less, to carry bonus payloads—two-cycle design for faster acceleration, smoother power, exceptional fuel economy and added life.

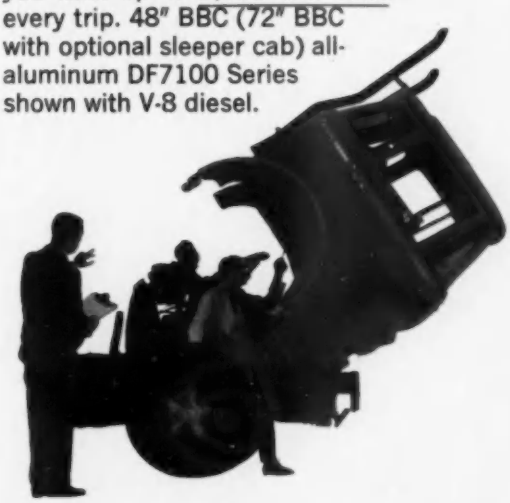
BIG PULL
MODEL
6V-71
8V-71

N THEIR CLASS!

PULLING POWER! HIGH, FUEL-SAVING PERFORMANCE!		
DEL	MAX. TORQUE	MAX. HORSEPOWER
-71	604 @ 1200	197 @ 1800 or 218 @ 2100
-71	758 @ 1200 or 805 @ 1200	243 @ 1800 or 290 @ 2100

Ratings are at sea level and 60° F.

Shortest, lightest tractors in their class! Earn up to $2,000 extra every year because you haul up to 2,000 lbs. extra every trip. 48″ BBC (72″ BBC with optional sleeper cab) all-aluminum DF7100 Series shown with V-8 diesel.



Save service time and expense with 55° tilt. Diesel is easy to work on. Stationary island holds controls in trouble-free alignment. With 72″ BBC and front axle set back 52″, you haul bonus payloads . . . turn shorter, maneuver easier everywhere.

Yours only from GMC—V-6 diesel-powered 90″ BBC trucks from 30,000 lbs. GVW to 120,000 lbs. GCW, with unexcelled versatility and preferred dimensions to haul biggest loads at lowest cost.

HERE'S PROOF: EXCLUSIVE GMC E

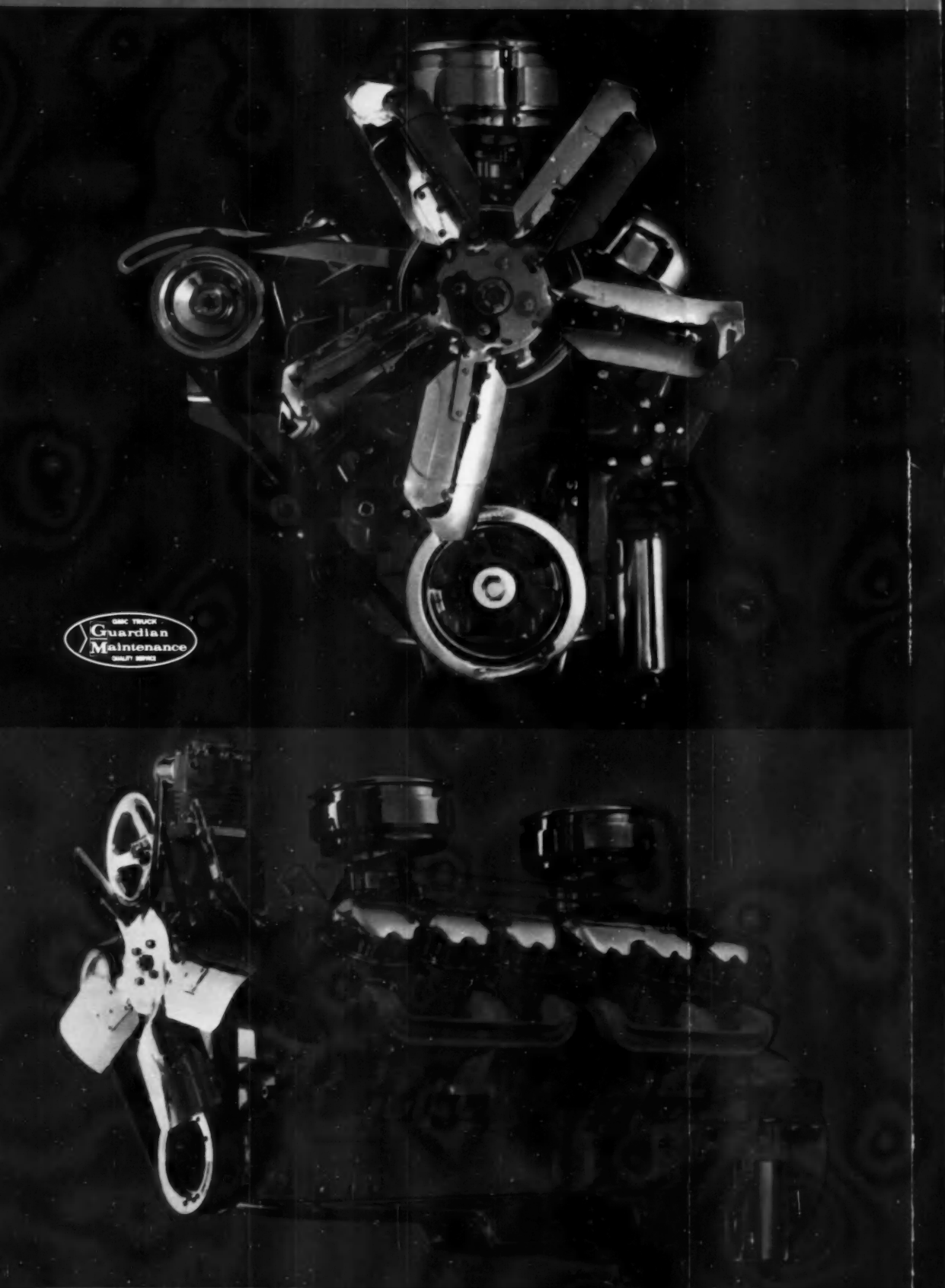
GMC's EXCLUSIVE V-6 TRUCK ENGINES DELIVER COST-BUSTING DEPENDABILITY AND PERFORMANCE! Here is the popular, proved six-cylinder principle in a more compact, stronger and easier-to-service design that is setting the industry's standards today and for the future. Full-power over a broad range at low engine speed, and shortest stroke of any comparable truck-built engines, reduce power-robbing wear, add to greater fuel economy and provide the desired, higher performance. Fully-machined combustion chambers assure precise combustion balance. Short, separate intake inlets provide equal fuel-air mixture for smoother, maximum power from every drop of fuel. Spark plugs are located inside the 60 degree "V" for longer life. See your GMC Dealer for all the life-extending, profit-producing advantages.

HERE'S YOUR COMPLETE CHOICE OF EXCLUSIVE GMC V-6 GAS ENGINES		
MODEL	GROSS TORQUE RANGE	MAX. HP.
305A	258-260 @ 1400-2200	150 @ 3600
305B	264-266 @ 1100-2000	150 @ 3600
305C & D	275-280 @ 1100-2400	165 @ 3800
351	308-312 @ 1400-2400	180 @ 3400
401	375-377 @ 1200-2000	210 @ 3400

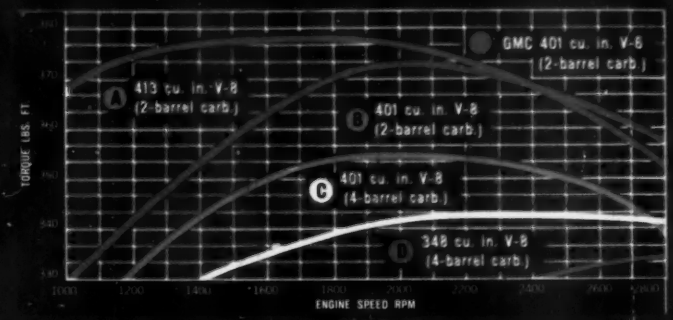
UNDISPUTED POWER SUPERIORITY! This 702 cu. in. Twin-Six gas engine produces the most power of any standard equipment engine. You get highest usable torque and horsepower over a longer, lower rpm range . . . great reserve power to haul loads at part throttle under normal conditions, using reserve only for hills. Results: amazing fuel economy, gear shifting reduced up to 60%, higher sustained road speeds and greatly increased engine life.

GREATEST PULLING POWER OF ALL		
MODEL	GROSS TORQUE RANGE	MAX. HP.
702	625-630 @ 1400-2100	275 @ 2400

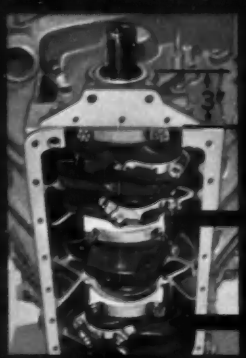
ENGINES OUT-POWER, OUT-LAST



OTHER GASOLINE ENGINES!!!


GMC 401 cu. in. V-8 (2-barrel carb.)
A 413 cu. in. V-8 (2-barrel carb.)
B 401 cu. in. V-8 (2-barrel carb.)
C 401 cu. in. V-8 (4-barrel carb.)
D 348 cu. in. V-8 (4-barrel carb.)
TORQUE LBS. FT.
ENGINE SPEED RPM

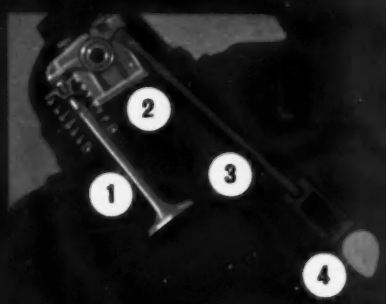
MOST LOAD-MOVING POWER! Torque is the true measure of a truck engine's working ability. These curves prove conclusively that this GMC V-6 out-works all other comparable engines—and over a broader range, and at much lower rpm . . . at engine speeds where torque is most needed . . . at engine speeds that mean less costly wear and added miles per gallon of gas.



Deep, cast-in strength with block extending 3" below crankshaft centerline, big inner ribbing and widely staggered cylinders . . . stronger, more rigid.

GMC bearings out-last others with up to 60% more area and M400 material.

Big, rigid crankshafts weigh twice as much as comparable V-8s . . . tougher, stronger to last longer.

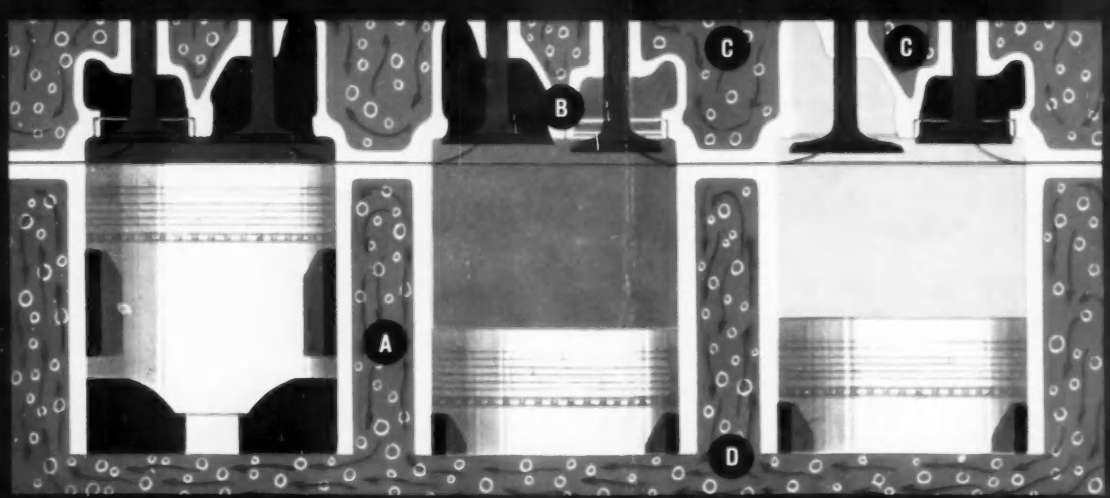


POSITIVE-ACTING, LONGER-LASTING VALVES! Both intake and exhaust valves are extra large and durable. You get big valve heads; thick, short, stiff stems; positive rotators; integral valve guides **(1)** . . . everything for the best sealing, less wear, free breathing and cooler operation.

Five brackets **(2)** solidly hold rocker shaft in exact location. Aluminum material expands to maintain correct valve-lash clearance at all operating temperatures.

Short, rigid push rods **(3)** are practically deflection-free.

High-mounted camshaft **(4)** has positive lubrication even at cold starts, to protect lobes and lifters from galling and scoring.



ENGINE LIFE-KILLING HOT SPOTS ELIMINATED! Water temperature varies less than 4 degrees in the entire engine. Notice the extra-wide water passages **(A)** completely surrounding each cylinder. See the wide-spaced valves **(B)** . . . the big cooling area **(C)** for rapid heat dissipation. New high-volume water circulation **(D)** up to 176 gallons per minute, assures the flow necessary for life-prolonging heat transfer. Here is proof GMC engines are built to last longer.

GMC FLEET TRUCKS ARE YOUR BEST HAULING INVESTMENT!

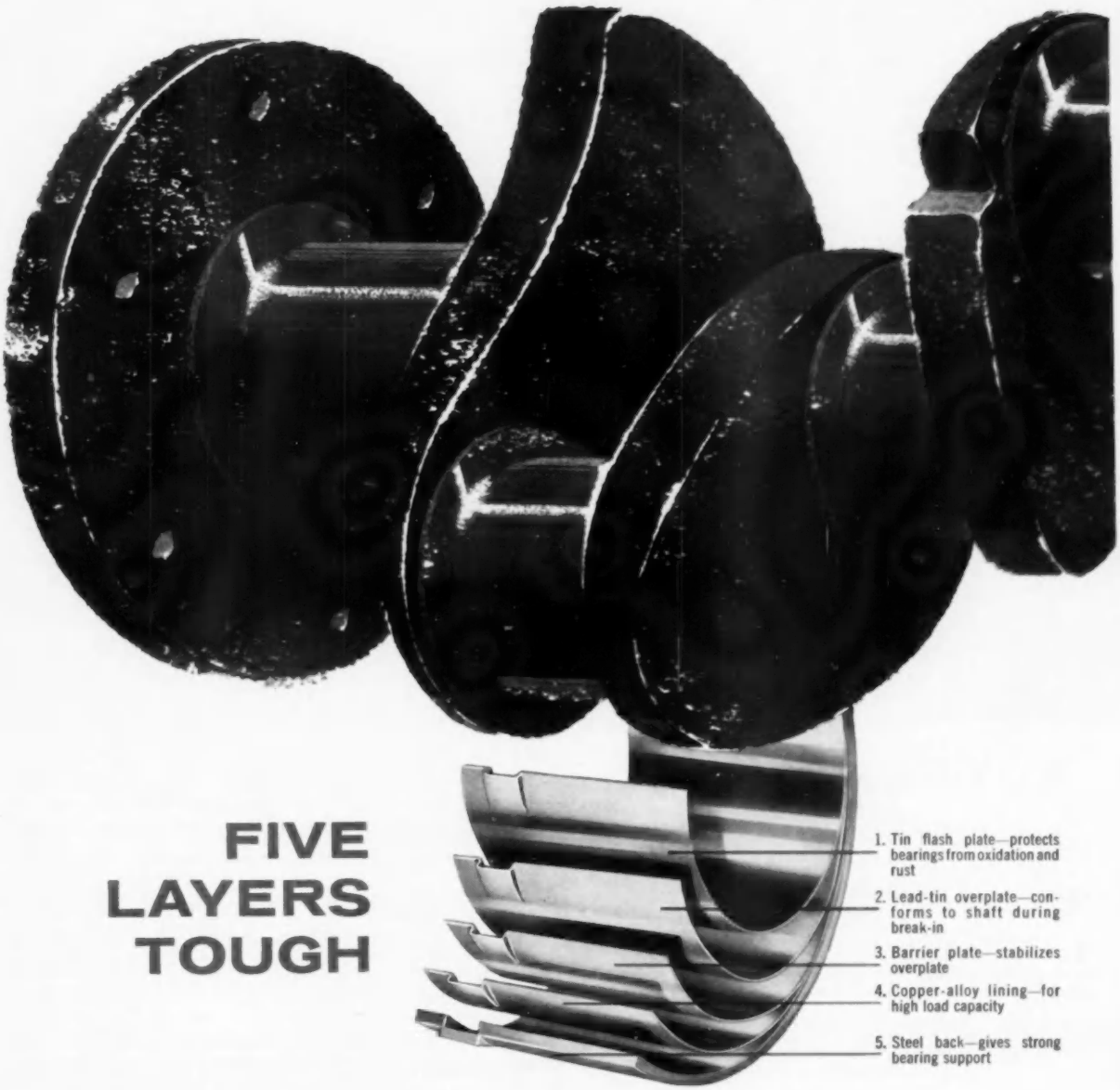
Highest power, and biggest payloads of all GMC Trucks—the BW9000 Series with 275 hp. Twin-Six and 120,000 lbs. GCW. Smaller 90″ BBC V-6 powered models start at 19,500 lbs. GVW.

Short wheelbase, turning, over-all length and big payloads are yours with 72″ BBC and 52″ front axle location. GMC steel tilt-cabs also give you profit-performance with choice of four exclusive V-6s and the superior Twin-Six.

Newest, lowest-priced GMC six-wheelers with America's only V-6 power, 351 and 401 engines. Four and six-wheel 105″ BBC Conventionals completely cover the range from 5,200—48,000 lbs. GVW.

GMC Truck & Coach . . . a General Motors Division . . . Pontiac, Michigan

TEAR OUT AND SAVE


1. Tin flash plate—protects bearings from oxidation and rust
2. Lead-tin overplate—conforms to shaft during break-in
3. Barrier plate—stabilizes overplate
4. Copper-alloy lining—for high load capacity
5. Steel back—gives strong bearing support

FIVE LAYERS TOUGH

When you put your equipment to work, loads on connecting rod and crankshaft bearings build up to 1,000, 2,000, 4,000 and more pounds per square inch. Engine bearings must be rugged enough to stand up under these two-ton pressures.

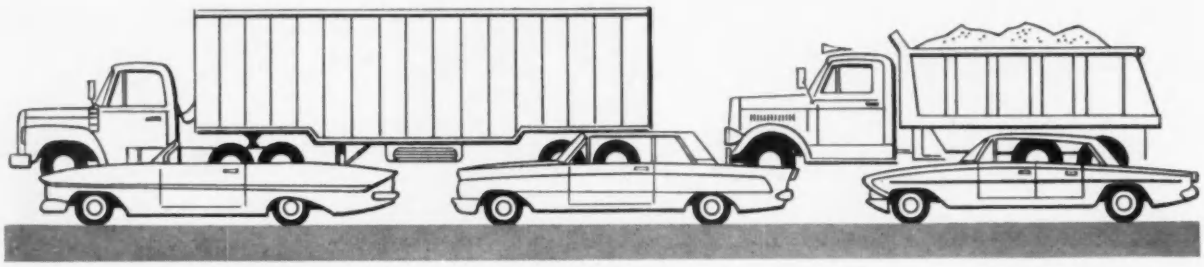
Federal-Mogul developed and built the 5-layer, heavy-duty replacement bearing for just this kind of service. It will take continuous loads up to 4,800 psi . . . triple the load limit of the best babbitts. Five separate layers give you high fatigue strength for high horsepower engines plus the good "conformability" that's necessary for new bearings to adjust to the crankshaft during break-in.

The complete Federal-Mogul line also includes overplated aluminum-alloy, straight copper-alloy and babbitt bearings. Each is designed for a particular type of engine and gives maximum service in it. When you need replacement bearings, get Federal-Mogul . . . and you'll get the best.

FEDERAL-MOGUL ENGINE BEARINGS

FEDERAL-MOGUL SERVICE

DIVISION OF FEDERAL-MOGUL-BOWER BEARINGS, INC. • DETROIT 13, MICHIGAN



THERMOID BIG T AUTOMOTIVE PRODUCTS

Partners in the Golden Growth Years of the Truck and Bus Industry

Thermoid has shared the exciting progress of the Truck and Bus industry from its inception. Since the turn of the century, Thermoid has served the needs of this industry with automotive rubber products and friction materials. Thermoid quality products have grown in use because of research, development and availability that the industry respects.

FRICTION PRODUCTS Thermoid "pressure-forged" Thermoblocks withstand severe service and high temperatures. Especially developed and engineered for rugged, punishing schedules encountered in truck and bus service.

Thermoid Portoblocks are specifically designed for use by fleet operators who desire safe, positive braking at low initial cost. Economy priced, they are far superior to conventional low-priced blocks yet they provide better performance and considerably longer mileage than many "first grade" blocks.

A full line of clutch facings to fulfill every requirement of long life, sure grip, silent performance, no slip, chatter, or scoring. In extra heavy duty, heavy duty, woven and molded asbestos construction.

RUBBER PRODUCTS Heavy duty hose in molded and straight construction, for a variety of applications. New heavy duty fan belts are being continually added to the Thermoid line to provide fuller coverage and to keep it current with the expanding truck and bus industry. Air and Vacuum Booster Brake hose, Air Brake Diaphragms, Splash Flaps for truck and buses are also available.

HYDRAULIC BRAKE PARTS AND FLUID Precision-made parts for smooth trouble-free performance and positive braking. Heavy Duty and Ultra Heavy Duty brake fluid exceeds SAE specifications.

ALL QUICKLY AVAILABLE Thermoid's extensive line of premium quality products for use in the truck and bus industry are quickly available through 8 company warehouses and through conveniently located automotive redistributors and jobbers.

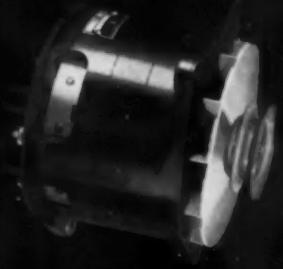
For further information on Thermoid Big T lines, contact Thermoid Division, 200 Whitehead Road, Trenton 6, New Jersey. Telephone JU 7-3000.

PORTER

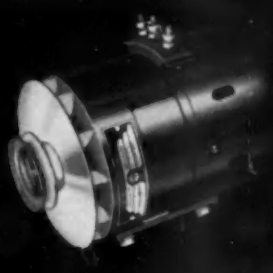
THERMOID DIVISION
H. K. PORTER COMPANY, INC.

6000 SERIES
6 and 12 Volt–40 Amp.
Light-Medium Duty for
cars, trucks, marine

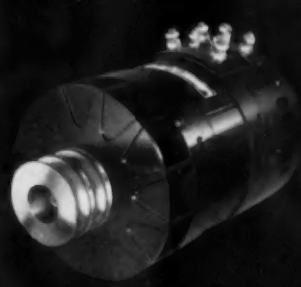
2074 SERIES
6, 12, 24, 32 Volt–60 Amp.
Medium-Heavy Duty for
cars, trucks, marine



2038 SERIES
6, 12, 24, 32 Volt–60 Amp.
for marine, other corrosion
factor applications



2000 SERIES
6, 12, 24, 32 Volt–100-125 Amp.
Heavy Duty–Extra H.D. for
cars, trucks, marine, railroads



2064 SERIES
12 Volt–150 Amp.
Extra Heavy Duty for
buses, earthmovers, etc.

There's a LEECE-NEVILLE ALTERNATOR to match any job requirement

Leece-Neville manufactures more than 300 different alternators—each designed to provide adequate electrical power, save batteries, eliminate downtime and cut maintenance expense. One or more of these is "just right" for your type of vehicle in your type of service. Range of alternator models—all reversible—includes 6, 12, 24 and 32 Volt positive or negative ground types from 40 to 150 Amperes. Sales and service are readily available through more than 1200 L-N Service Distributors strategically located in the U. S. and Canada. Leece-Neville alternators and other electrical equipment can be specified as *factory-installed equipment* on most new vehicles. For more information—or for assistance in specifying the correct alternator for your vehicle and service requirements—just mail the coupon at the right.

QUALITY ELECTRICAL EQUIPMENT
Leece-Neville
SINCE 1909

The Leece-Neville Co., Dept. C-50
1374 E. 51st St., Cleveland, Ohio

Please send information about L-N alternators for:
☐ my present vehicles ☐ new vehicles

Name _____ Title _____

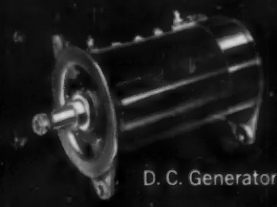
Company _____

Address _____

City _____ Zone ____ State _____

Type of Service _____

OTHER LEECE-NEVILLE QUALITY AUTOMOTIVE ELECTRICAL EQUIPMENT



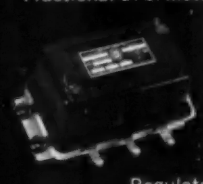
D. C. Generators

Cranking Motors

110-Volt Power Pack
(use with Alternators)

Switches
(Magnetic & Series Parallel)

Fractional D. C. Motors



Regulators

Back right up to the dock!

The "OVERHEAD DOOR" needs no elbow room to open

The "OVERHEAD DOOR" rolls up instead of swinging out.
Saves the time of stopping short of the dock to open and close doors. Saves time maneuvering in tight spots. Saves repair bills, too.

NEW MODEL "CA" MOBILE DOOR OFFERS:

- Minimum headroom
- New, positive bottom seal
- New lock clears the head
- HD roller assembly
- All hardware galvanized
- Twin safety cables

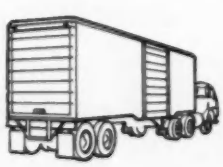
INVESTIGATE THESE FREE SERVICES:

Free Design Service: Our engineers will analyze your special truck or trailer door problems; give you professional design assistance.

Free Installation Instruction: To insure trouble-free performance, a trained instructor from our firm will supervise your employees in correct installation methods.

Free Follow-Up Service: Each "OVERHEAD DOOR" is warranted. If it fails to perform as it should, a representative from our firm will see that it functions properly.

THE "OVERHEAD DOOR" TRADE MARK



MOBILE DOOR DIVISION

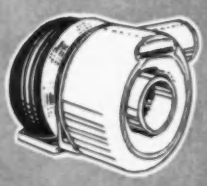
Send for literature today! Write: Mobile Door Division, Overhead Door Corporation, Hartford City, Ind.

OVERHEAD DOOR CORPORATION

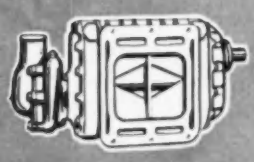
SCHWITZER

Fans

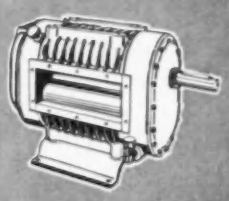
Fan Drives



Turbochargers



Superchargers



Air Pumps

Dampers

Pumps

Shaft Seals

PRECISION PRODUCTS

with

a

new

approach

INTERNATIONALLY ACCLAIMED

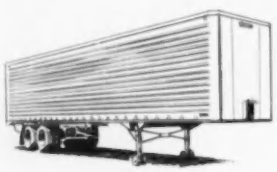
SCHWITZER
CORPORATION
INDIANAPOLIS 7, INDIANA U.S.A.

FROM AN IDEA...

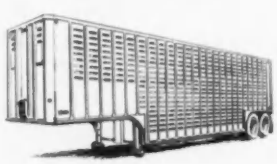
From that day in 1914 when the first Fruehauf Trailer appeared on the streets of Detroit, the influence of the truck-trailer on the growth of the trucking industry has been tremendous . . . Multiplying the usefulness of the motor truck by greatly increasing its capacity and flexibility, the truck-trailer made possible the development of long distance hauling . . . And during the evolution of this vital business tool, Fruehauf, the pioneer, has maintained its leadership in engineering, manufacturing and servicing. Evidence of this leadership is the fact that, year after year, professional haulers have bought more Fruehauf Trailers than any other make . . . We are grateful for the thousands of customers whom it is our privilege to serve and we pledge our entire facilities to their continued satisfaction and good will.

ONLY FRUEHAUF GIVES YOU

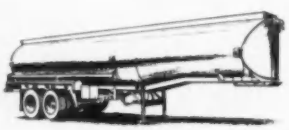
☆ A REALLY COMPLETE LINE OF TRAILERS
☆ NATION-WIDE SERVICE FACILITIES
☆ A COMPREHENSIVE FINANCING PLAN
☆ ADVANTAGEOUS LEASING ARRANGEMENTS



Volume☆Vans in a wide range of types and sizes



The most scientifically designed Livestock Vans

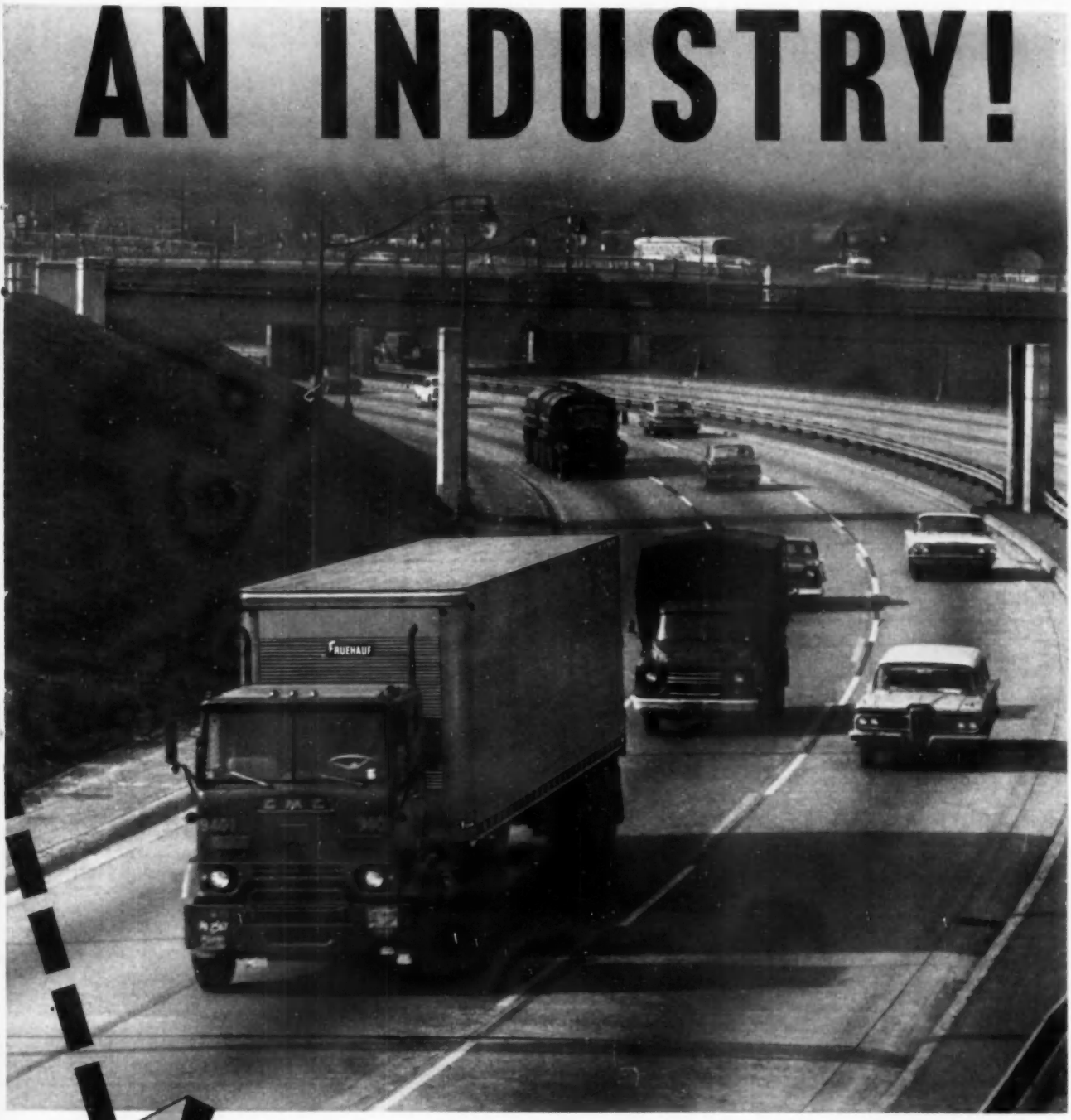


Tank-Trailers for every liquid or dry bulk haul

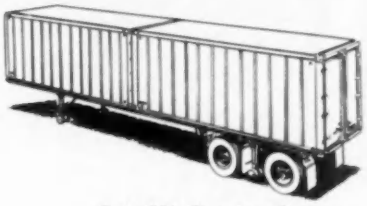
Rugged Platform Trailers do a wide variety of jobs

FRUEHAUF TRAILER COMPANY • 10940 Harper Avenue, Detroit 32, Michigan

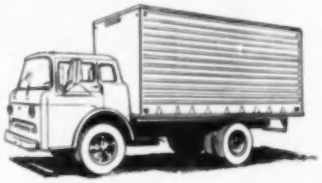
AN INDUSTRY!



FRUEHAUF TRAILERS



Twin 20's Container Systems
for road, rail, or water



Volume☆Van Truck Bodies
with Trailer strength

"ENGINEERED TRANSPORTATION" - The Key To Transportation Savings

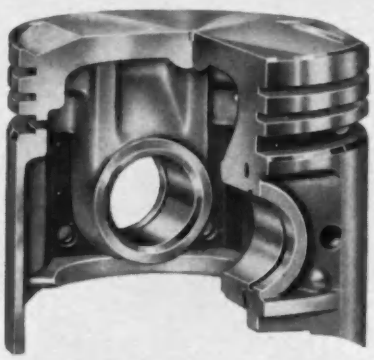
THE COMPLETE PISTON LINE

SILV-O-LITE

ALUMINUM PISTONS

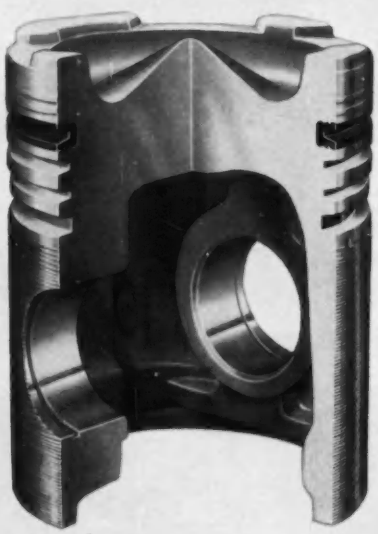
FOR 40 YEARS THE STANDARD

IN DESIGN . . . PERFORMANCE . . . DEPENDABILITY . . . VALUE



A continuing program of research and development that designs, tests, improves **and proves** the efficiency and longer life of SILV-O-LITE pistons.

. . . AND FOR HEAVY DUTY GASOLINE, DIESEL & LPG ENGINES



DUALOY

The bonded aluminum plus niresist insert piston designed and introduced by SILV-O-LITE in 1948. Now the standard heavy duty piston for the industry.

A PRIME MANUFACTURER OF PISTONS

UNITED ENGINE & MACHINE COMPANY

P. O. BOX 65 · 310 PREDA STREET · SAN LEANDRO, CALIFORNIA

TRAILER AXLES
18,000 and 20,000 lbs

STEERING AXLES
1,500 to 9,000 lbs

PLANETARY AXLES
over 50 models, drive and steer:
6,500 to 120,000 lbs

AXLE-TRANSMISSION UNITS
agricultural and industrial

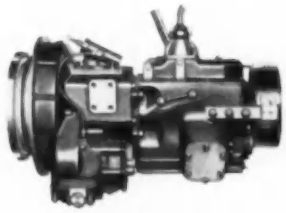
POWER TAKEOFFS
Flywheel, countershaft, and conventional types

AXLE HOUSINGS
5,000 to 23,000 lbs

One source:

CLARK

of course



TRANSVERTERS
torque converter-clutch-transmission packages

Whatever your needs in power transmission equipment, chances are you can get it from Clark.

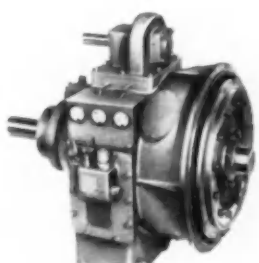
Even more important, chances are a Clark unit *now in standard production* will do the job for you.

For Clark's Automotive Division, in its nearly 60 years of specialization in the power transmission field, has developed what is probably the broadest line of heavy-duty axles, transmissions, and torque converters available today.

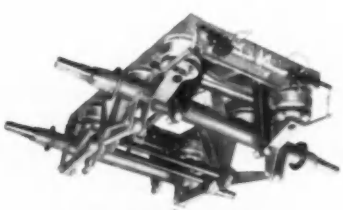
The savings are obvious. Proven performance. Lower cost. And faster delivery.

Write us for full details regarding any of the products shown.

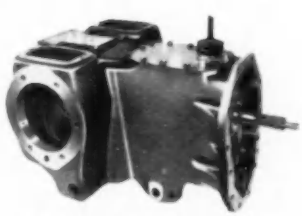
TRANSMISSIONS
50 to 1400 lb-ft torque ratings



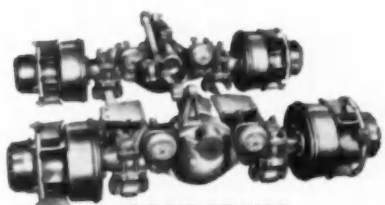
TORQUE CONVERTERS
9" to 28" diameters



AIR SUSPENSIONS
single, tandem, and spreads;
up to 36,000 lbs



AGRICULTURAL UNITS
transmissions, axles, PTO's



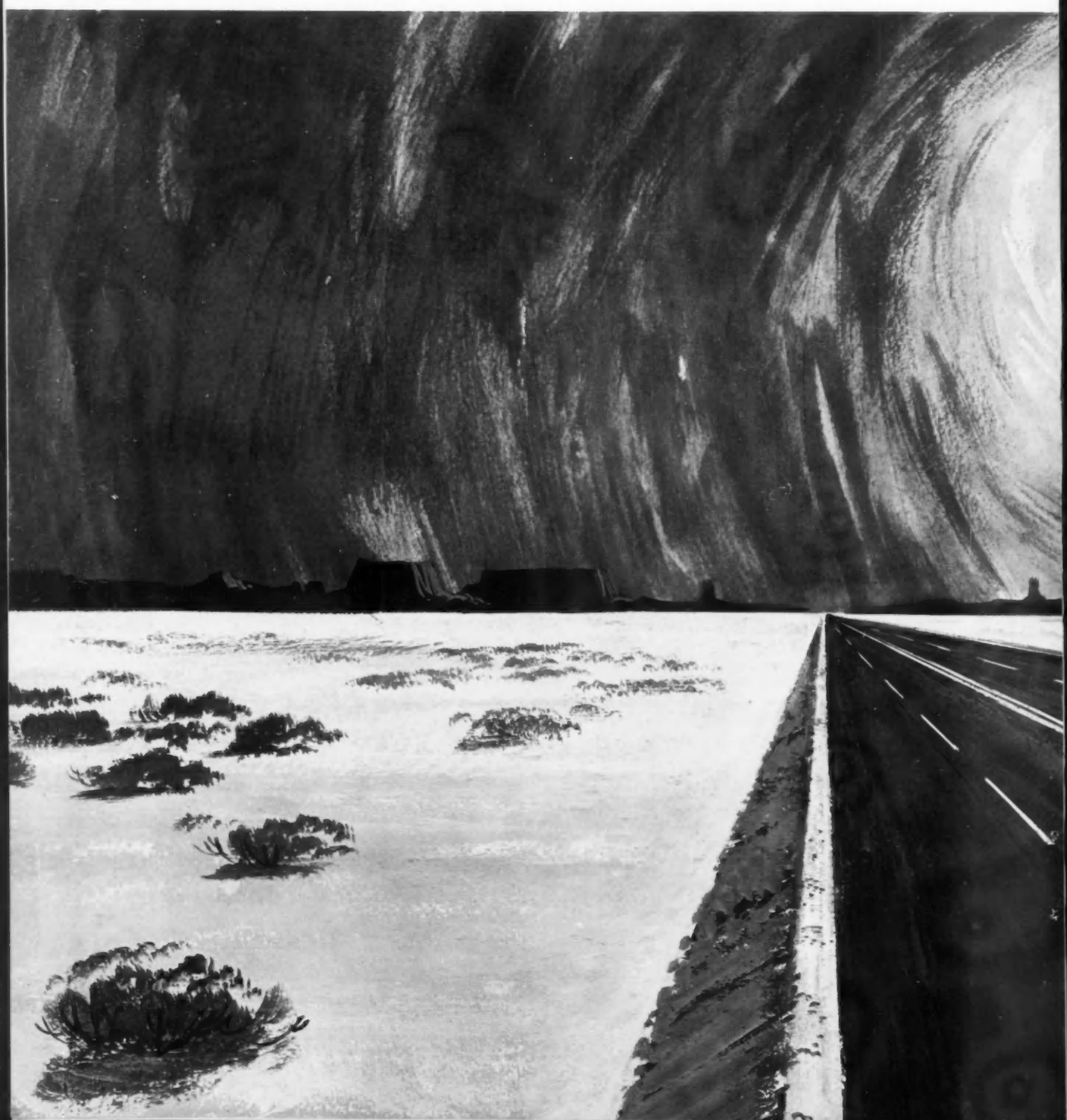
BOGIE DRIVES
45,000 to 180,000 lbs

CLARK® EQUIPMENT

TransVerter is a trademark of
CLARK EQUIPMENT COMPANY
AUTOMOTIVE DIVISION
Buchanan 3, Michigan

PROVING GROUND

You read a lot of words about trailer quality today . . . words like "extrusion" and "longeron." These words are OK. We've used them ourselves for more than thirty years. But if you really want to know how a trailer will perform, run it for a hundred thousand miles or so.



If you're not operating Brown Trailers now, ask someone who is (list on request). Ask him about maintenance costs. Then look at some Brown Trailers that have been on the road long enough to wear off all the newness. You'll find that a little dirt or road tar can't cover up the solid look of real quality.

By the way, don't look for a Brown in a used trailer lot. Brown Trailers are built for the road, and that's where most of them are now.

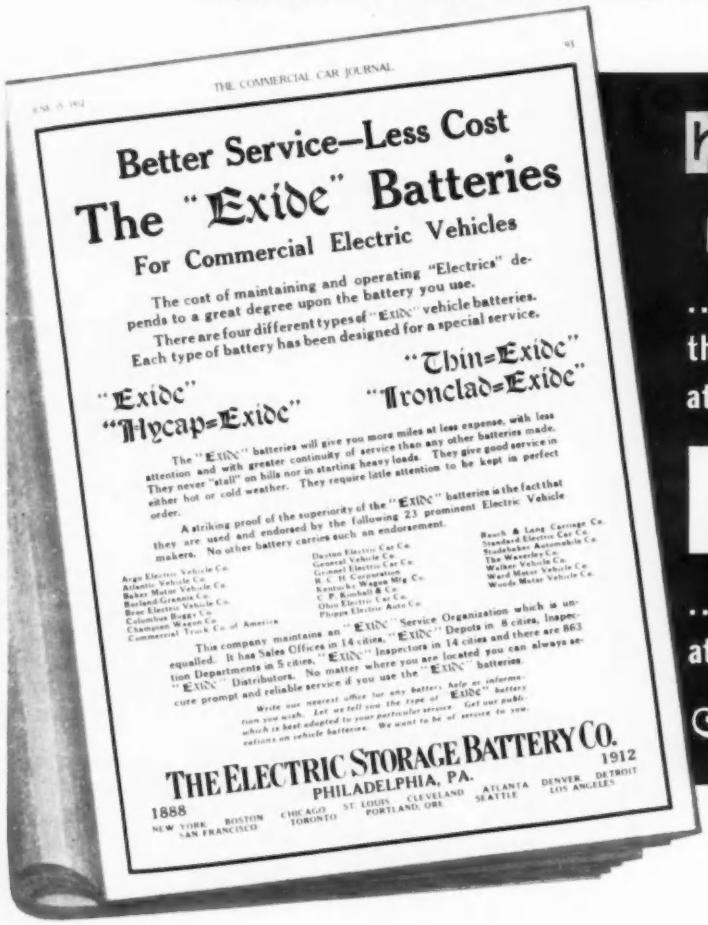
BROWN®

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY
BROWN TRAILER DIVISION
Michigan City, Indiana

Copy of this illustration suitable for framing available on request.

June 15, 1912 this first Exide page ad appeared in THE COMMERCIAL CAR JOURNAL—



THE COMMERCIAL CAR JOURNAL

JUNE 15 1912

Better Service—Less Cost
The "Exide" Batteries
For Commercial Electric Vehicles

The cost of maintaining and operating "Electrics" depends to a great degree upon the battery you use.

There are four different types of "Exide" vehicle batteries. Each type of battery has been designed for a special service.

"Exide"
"Hycap-Exide"
"Thin-Exide"
"Ironclad-Exide"

The "Exide" batteries will give you more miles at less expense, with less attention and with greater continuity of service than any other batteries made. They never "stall" on hills nor in starting heavy loads. They give good service in either hot or cold weather. They require little attention to be kept in perfect order.

A striking proof of the superiority of the "Exide" batteries is the fact that they are used and endorsed by the following 23 prominent Electric Vehicle makers. No other battery carries such an endorsement.

Argo Electric Vehicle Co.
Atlantic Vehicle Co.
Baker Motor Vehicle Co.
Borland-Grannis Co.
Brae Electric Vehicle Co.
Columbia Buggy Co.
Champion Wagon Co.
Commercial Truck Co. of America
Dayton Electric Car Co.
General Vehicle Co.
General Electric Car Co.
Gramm Electric Co.
H. C. H. Corporation
Kentucky Wagon Mfg. Co.
C. P. Kimball & Co.
Ohio Electric Car Co.
Phelps Electric Auto Co.
Rauch & Lang Carriage Co.
Standard Electric Car Co.
Studebaker Automobile Co.
The Waverley Co.
Walker Vehicle Co.
Ward Motor Vehicle Co.
Woods Motor Vehicle Co.

This company maintains an "Exide" Service Organization which is unequalled. It has Sales Offices in 14 cities, "Exide" Depots in 8 cities, Inspection Departments in 5 cities, "Exide" Inspectors in 14 cities and there are 863 "Exide" Distributors. No matter where you are located you can always secure prompt and reliable service if you use the "Exide" batteries.

Write our nearest office for any battery help or information you wish. Let us tell you the type of "Exide" battery which is best adapted to your particular service. Get our publications on vehicle batteries. We want to be of service to you.

THE ELECTRIC STORAGE BATTERY CO.
PHILADELPHIA, PA.
1888 1912
NEW YORK BOSTON CHICAGO ST. LOUIS CLEVELAND ATLANTA DENVER DETROIT
SAN FRANCISCO TORONTO PORTLAND, ORE. SEATTLE LOS ANGELES

THEN

...Exide Batteries were lowering the cost of maintaining and operating commercial electric vehicles

NOW

...Exide is still helping truck operators lower their cost of operation

EXIDE'S "RUGGED SERVICE" BATTERIES give you two exclusive features that LOWER YOUR COST PER MILE

1. ANTI-SULFATE 57 makes negative plates last up to 65% longer. This Exide manufacturing process completely eliminates complaints of short-life failures due to negative plate sulfation.

2. PLATE-LOCK reduces vibration damage—holds plates firmly in position—minimizes shake-off of capacity-carrying active material from the battery grids.

Exide makes the most complete commercial battery line in the business. For more information, see your Exide Distributor or write: Exide Sales, Automotive Division, The Electric Storage Battery Company, Box 6266, Cleveland 1, Ohio.

WHEN IT'S AN

ESB **Exide** ***...YOU START!***

NEW BORG & BECK 12-INCH CLUTCH FITS INTO 11-INCH BELL HOUSING

Packs More Muscle for School Buses, Medium-Duty Trucks, Diesel Conversions

Now—for the first time—you can get greater load capacity in school bus and truck clutches, without changing flywheel size, housing, motor mounts or pedal linkage.

This new Borg & Beck 12A5 clutch mounts on the same flywheel bolt circle, in the same size housing, as B&B Type 11A8—yet provides substantially more load capacity. And that means longer life, more engagements, more miles of on-the-go service under punishing stop-and-go operation.

Already adopted as original equipment by two leading school bus and truck makers, Type 12A5 is also the answer for stepped-up capacity in replacement service. And it's recommended, too, for conversions from gasoline to diesel operation.

Like all Borg & Beck clutches, the new Type 12A5 is designed, engineered and built to B&B's leadership standards for quality, performance and value. That's your dependable assurance of complete satisfaction.

BORG & BECK CLUTCH — THE STANDARD
Reg. U.S. Pat. Off.

BORG & BECK
B-W
DIVISION
BORG-WARNER

BORG & BECK®

THE AUTOMOTIVE STANDARD FOR NEARLY 50 YEARS

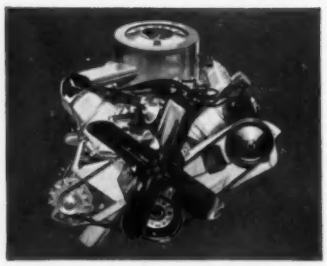
BORG & BECK DIVISION, BORG-WARNER CORPORATION, CHICAGO 38, ILLINOIS

Export Sales: Borg-Warner International, 36 S. Wabash, Chicago 3

IT PAYS TO GET A COMPLETE CAR WHEN YOU INVEST IN A FLEET CAR!

NEW OLDS F-85

with V-8 power in every model...
Oldsmobile style and quality...
to return "SOMETHING EXTRA" at resale time!



SMOOTH V-8 PERFORMANCE!

A full eight cylinders' worth of action comes as standard equipment in every F-85! The 155-h.p. Rockette V-8 is a highly-efficient aluminum engine that saves fuel by saving weight . . . *and runs on regular gas!* A 185-h.p. version is standard on Cutlass models . . . optional at moderate extra cost on other F-85s.

LOW MAINTENANCE!

Oldsmobile's reputation for low maintenance traditionally commands a better price on the used car lots. And the F-85 is carrying on this tradition—because it's "*every inch an Olds!*" Low maintenance and high resale keep fleet costs down and profits up!

OLDS QUALITY AND PRESTIGE!

It's not only a pleasure, but good business sense for your company representatives to drive an Olds F-85—the *quality* car that reflects the quality of your own services and products. There is "*something extra*" about arriving in an Olds that increases the confidence of your men and your clients!

REMARKABLE ROADABILITY!

For '62, Oldsmobile moves still farther ahead to insure satisfaction . . . with a new concept of quality and reliability that makes every Olds a car of superiority! And the F-85 is no exception! Mile after mile, your fleet can profit from the extra reliability that is planned, designed, tested, supervised and built into every rugged Oldsmobile!

Get your free copy of Oldsmobile's '62 "Fleet Facts" Folder! Write National Fleet Sales Manager, Oldsmobile Division, General Motors Corporation, Lansing 21, Michigan.

ROGERS

They're "ROGERS BUILT"

"The Only Alloy I Beam Trailer at Popular Prices"

"The ULTIMATE in HIGH FLATS"

Hi-tensile steel and lightweight, yet ruggedly constructed for durability. Basic design and operational features measure up to the high standards consistently maintained in all Roger Trailers.

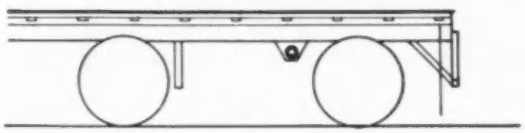
Ultra-modern, lightweight wheel suspension. Controlled brake reaction; no hopping or chattering. Get all the facts.

The frame is built from structural steel members.

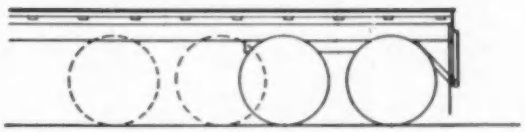
These quality trailers help maintain the 56 year Rogers reputation as "Master Builders in the Trailer Field."

SHOWN Here are Some of the Axle Suspensions Offered by Rogers.

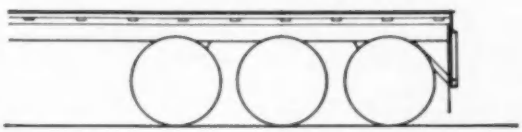
(New literature available gives complete information, dimensions and specifications on all suspension versions.)



▲ Spread Tandem



▲ Sliding Tandem



▲ Triple-Axle Tandem

Please Forward Literature on **HIGH-FLAT TRAILERS**

Name_____

Company_____ Title_____

Street Address_____

City_____ State_____

ROGERS *The Ultimate in Trailers*

ROGERS TRAILERS INCORPORATED . ALBION, PENNSYLVANIA

EXCLUSIVE 100,000-MILE WARRANTY on 401-, 477- and 534-cu. in. Super Duty V-8's is the most liberal in the industry. Each major engine part (including block, heads, crankshaft, valves, pistons, rings), when engine is used in normal service, is warranted by your dealer against defects in material or workmanship. *The warranty covers full cost of replacement parts* for 100,000 miles or 24 months (or 3,000 hours if used as a power source for other than propelling the vehicle), whichever comes first . . . *full labor costs* for 50,000 miles, 12 months or 1,500 hours, sliding percentage scale thereafter.

THEY'RE HERE!

NEW '62 FORD TRUCKS

Get full-time economy that only starts with Ford's low price!

Meet the trucks that make saving money a full-time business—new Ford Trucks for '62!

In a selection of over 600 models there's a truck that's right for your job, whatever your job . . . trucks that you can buy and operate at lower cost . . . trucks that can save you money mile after mile, load after load, year after year!

They save on price. They save on gas and oil. They save on tires and on maintenance—wherever there's a way to save! The full record of Ford economy, covering three years of independent tests, is detailed in Ford's Certified Economy Reports. See your Ford Dealer now. Check out the facts, work out a deal, and drive out a truck that saves money . . . full time!

FORD TRUCKS COST LESS

SAVE NOW . . . SAVE FROM NOW ON!

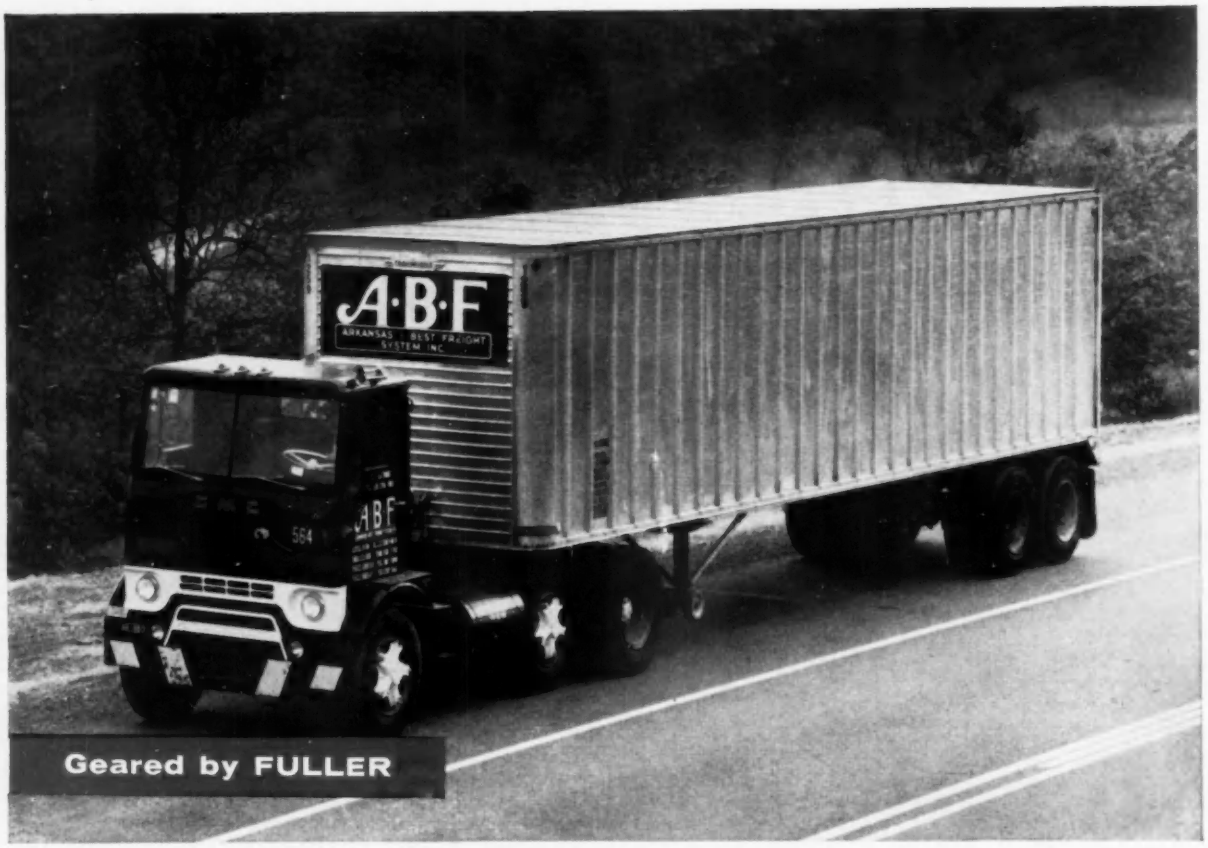
AMERICA'S MOST POPULAR VAN—and small wonder! Econoline savings start with a price far under any popular ½-ton conventional panel on the market! And they continue saving every day—certified tests have shown that in 16,000 miles, savings in operating costs compared to the conventional panel you may now own could top $100! Big 4-ft. doors rear and curbside plus 204 cu. ft. of load-space, and a floor that's flat the full length, provide for easy handling of cargo.

EXCLUSIVE ONE-PIECE CAB-BODY DESIGN gives Ford Styleside Pickups extra capacity and extra strength. Heavy duty in every way for heavy going all day! And there's carlike riding comfort thanks to Ford's long wheelbase and exclusive *Driverized* Cab!

PROVEN 262-CU. IN. BIG SIX FOR FORD MEDIUMS includes more heavy-duty engine features than any other Six of its size. Never before such long-term durability, reliability, and economy at so low a price.

SUPER DUTY V-8 OR DIESEL power gives Ford's H-Series highway tractors superb performance. Optional sleeper cab adds only one inch to cab length, permitting 40-foot trailers in 50-foot overall length states. Choice of single-axle or tandem-axle models with GCW's up to 76,800 lb. —backed by the most liberal warranties ever offered in trucks.

PRODUCTS OF Ford MOTOR COMPANY



One of Arkansas-Best Freight System's 217 ROADRANGER-equipped rigs begins to add its share to the 61,000 miles logged by the fleet each day.

"You can't beat ROADRANGERS for durability"

The above quote is from Harry B. Fink, Vice President, Maintenance, for the Arkansas-Best Freight System, Inc., Fort Smith, Arkansas. Handling virtually 100% of the line's highway chores are its 227 tractors equipped with Fuller Transmissions.

Fifteen of the system's rigs are new GMC DFW 7010 Tractors and 182 are GMC DF 869 Tractors, all equipped with GMC Diesel Engines and Fuller R-96 10-speed ROADRANGER Transmissions.

Operating from the Great Lakes to the Gulf of Mexico, ABF logged over 22,000,000 miles during 1960 and had gross revenue in excess of $17,000,000. The company's constant growth since its founding in 1935 continues with its acquisition in 1959 of management control of Healzer Cartage Company, a Kansas City (Mo.) carrier.

"Our Fuller-geared GMCs have given us outstanding performance, reliability and economy," Mr. Fink says. "When it comes to high mileage operations, I don't believe you can beat ROADRANGERS for durability."

Fuller Transmissions are designed to help you get more profit from *your* operation. For full details see your truck or equipment dealer, or write Fuller Manufacturing Company.

FULLER TRANSMISSION DIVISION

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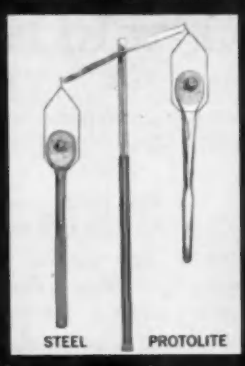

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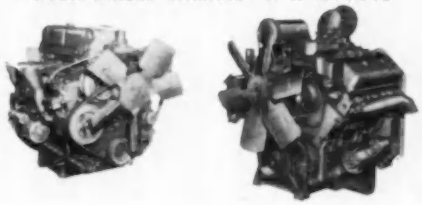

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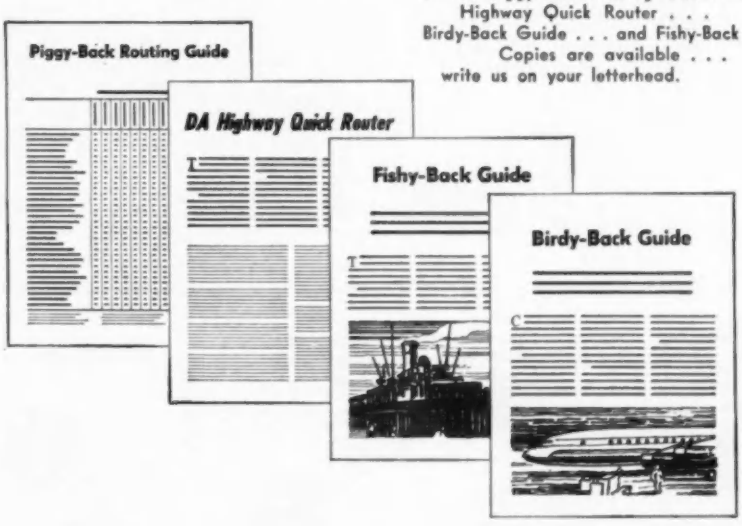

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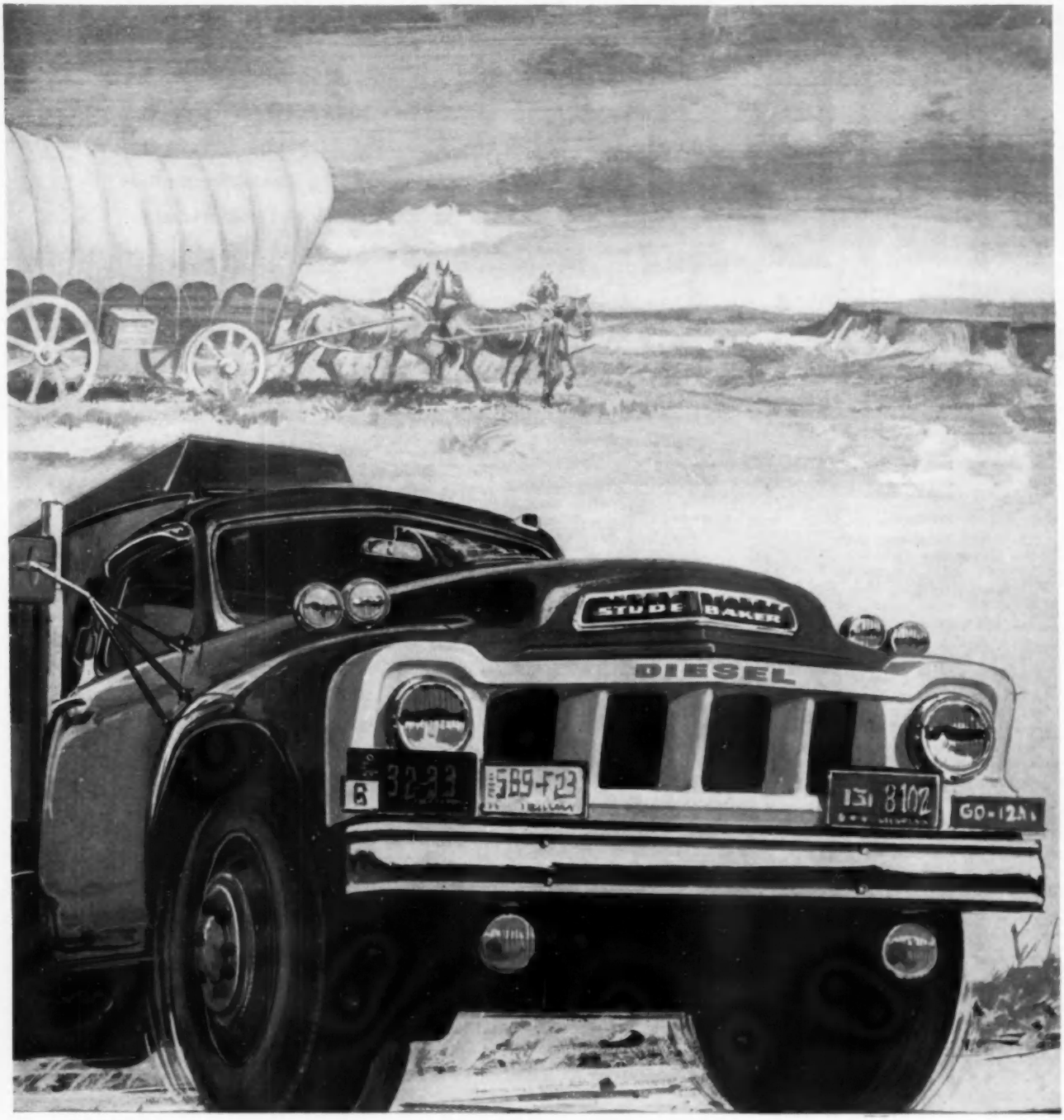

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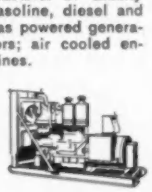

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